



AVATAR

THE WAY OF WATER

THE VISUAL DICTIONARY



TULKUN



RONAL, TSAHİK OF THE
METKAYINA CLAN



K-BAR MK3 COMBAT/
UTILITY KNIFE



NEYTIRI'S
BONE
COLLAR



CRAB SUIT



SKIMWING

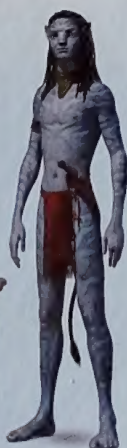
JAKE
SULLY



HEXBOT
HEAVY



NEYTIRI



NETEYAM



PANDORAN
FRUIT BASKET



AVATAR

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KIRI

AVATAR

THE WAY OF WATER

THE VISUAL DICTIONARY

BASED ON THE STORY, CHARACTERS,
AND WORLD CREATED BY
JAMES CAMERON

WRITTEN BY
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JAKE SULLY



FOREWORD

IN MY CAREER, I've been fortunate to have worked with some of the best and brightest filmmakers. I've portrayed characters from the distant past to the far-flung future and in all that time, one of the elements that creates and helps build an immersive performance for me is the *world* built by the filmmaker. A tangible, and sometimes intangible, universe is created through props and costumes, sets (both digital and practical), and with characters and creatures and all of the bits and pieces that go into making the fantastic and fictional... *real*.

In all of my time performing, I can say that no one that I've worked with has ever created a more "real" world than James Cameron, and this book is a testament to the universe he's created.

Through the talents of his massively skilled art department and the craftspeople at Wētā Workshop, Jim has populated Pandora with wholly believable cultures that could be featured in the pages of published magazines such as *National Geographic*. Every detail of this world has been crafted with a sensibility of what Jim refers to as "science-fact," not "science-fiction." The result is a reality of believability in everything on screen.

Having now been a part of multiple *Avatar* films, I know first-hand the exacting level of detail that Jim instills in everything that's seen on screen. He illustrates his boundless imagination and creativity at every turn. I'm constantly amazed at the new characters, diversity of Na'vi cultures, uniqueness of the flora and fauna, and overall beauty of Pandora that Jim is able to create.

This book showcases only a glimpse into the world of *Avatar*. The journey that I started as Dr. Grace Augustine has now become the journey of her daughter, Kiri. By revealing designs and details of just how incredibly rich and deep the world of Pandora can truly be, this book allows you to go on your own journey to Pandora.

This is only the beginning.

SIGOURNEY WEAVER

Dr. Grace Augustine / Kiri



PANDORA

THE FIFTH MOON of the gas giant Polyphemus, Pandora is similar in size, atmosphere, and appearance to Earth with continents and islands surrounded by seas of a familiar blue hue. Plant life is everywhere: forests and meadows cover much of the land, and rafts of floating seaweed dot the oceans. A wide variety of animals inhabit Pandora. Most of them are sixlimbed, except for the humanoid Na'vi. The ecology among all Pandoran creatures is delicately balanced, so Na'vi use the resources of their environment as efficiently as possible. This suggests a symbiotic relationship among all living things on the moon. The air is unbreathable to humans due to the excess carbon dioxide gas. But despite this, Pandora and its natural elements are of immense importance to the survival of humankind.

THE OMATIKAYA

The Omatikaya are a friendly and deeply spiritual clan of Na'vi that reside in a rainforest. They were the first Na'vi to have contact with humans on Pandora. Also known as the "Blue Flute Clan," the clan are noted weavers recognized for their beautiful textiles and woven structures. They are also proud warriors and protectors of their home and way of life.



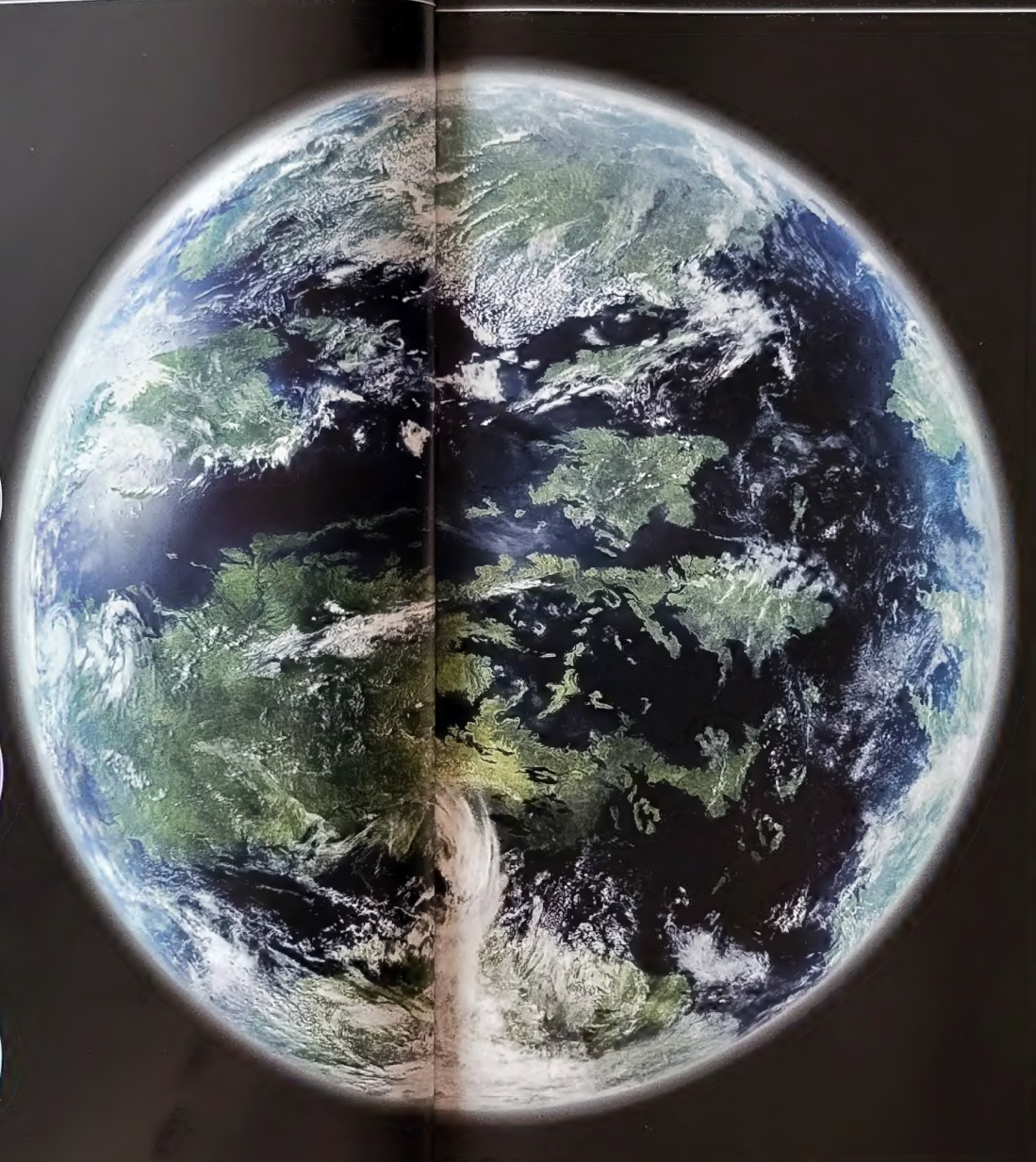
THE METKAYINA

The Metkayina are one of the subterranean Na'vi cultures, known as "Reef People," that live along coastal reefs, barrier reefs, and atolls. Their tranquil island home is protected from the wild ocean by a natural seawall. Although Metkayina history is rife with conflict and hardships, the clan has learned to live peacefully and simply in harmony with their ocean biome.



THE RDA

The Resources Development Administration (RDA) is a giant corporation with many subsidiaries that dominates all off-Earth mining and development throughout the Sol and Alpha Centauri systems. The RDA has monopoly rights to products shipped, derived, or developed from locations like Pandora. Subsidiaries include power utilities, manufacturing, defense, and pharmaceutical companies.



JAKE SULLY

Olo'eyktan (chieftain) of the Omatikaya clan, Jake is known as *Toruk Makto*, Rider of the Last Shadow, who drove the RDA from Pandora 15 years ago.



NEYTIRI

Tsakarem (spiritual leader in training) of the Omatikaya clan, Neytiri is also one of the fiercest warriors Pandora has ever known. She was instrumental in beating the RDA.



TONOWARI

Olo'eyktan of the Metkayina Clan, Tonowari oversees the well-being of his community on the reef. His clan respects him for his ideals and his ability to lead.



ROMAL

Tsahik of the Metkayina Clan, Romal is responsible for the spiritual needs of her people, but is also a warrior who is willing to put everything on the line to protect them.



GENERAL ARDMORE


The RDA's new Expeditionary Force Commander, General Ardmore is just the kind of on-world manager and military leader that the RDA needs for their return to Pandora.



COLONEL QUARITCH

A Recombinant (Recom) soldier for the RDA, Colonel Quaritch is on a mission: to hunt down and kill Jake Sully, leader of the Na'vi insurgency and traitor who betrayed both Quaritch and all of humanity.





CHAPTER 1: THE SULLY FAMILY

With the Battle of the Hallelujah Mountains now a distant memory, Jake Sully and Neytiri are living a life of peace and happiness. Family life suits them, and they now have four children. Neteyam is their first son, born soon after the expulsion of the RDA. Their middle son, Lo'ak, is a year younger, a self-perceived underdog who feels like he doesn't live up to his legendary parents and Neteyam's standing in the Omatikaya. Tuktirey (Tuk) is their youngest child; she is an independent and opinionated youngster who has to grow up fast. Neytiri and Jake have also adopted Kiri, who was mysteriously born of Dr. Grace Augustine's dormant avatar.

This close-knit family is learning to adapt to survive the return of the RDA and its ramifications for their world.

JAKE SULLY

TORUK MAKTO, DREAMWALKER, olo'eyktan of the Omatikaya, public enemy number one of the RDA: Jake Sully has accrued many titles. Fifteen years have passed since his legendary victory at the Battle of the Hallelujah Mountains. Jake fears the inevitable return of the RDA, especially as he is a father with four children to care for. While Jake is still an inspiring warrior and leader, his propensity to take risks has been tempered by concerns for his family and the guilt he feels for the lives lost all those years ago.



JAKE'S KNIFE

Jake still uses the same knife that he used while training to be an Omatikaya warrior.

Waxed, braided leather thread

Naturally twined razor palm and Pandoran flax

BATTLE ARMBAND

OMATIKAYA OLO'EYKTAN

Jake has held the mantle of olo'eyktan since the deaths of Olo'eyktan Eytukan and his successor, Tsu'tey. Responsible for the safety of his people, Jake uses his human background to bring a unique perspective to the role. For example, he has forbidden his clan from finding a new Hometree, knowing it would be a target for the RDA. Jake also draws on his diplomatic skills to try to reconcile the Omatikaya and humans. As a result, the Omatikaya build a village near Hell's Gate where the remaining humans on Pandora live.

DATA FILE

SUBJECT Jake Sully

SPECIES Avatar (previously human)

AFFILIATION Omatikaya

HEIGHT 8 ft 11 in (2.72 m)

JAKE'S KNIFE SHEATH



Riding their ikran, Jake, Neytiri, and Neteyam fly among the Hallelujah Mountains.



Hand-carved ax head

Fifteen-year-old model

Leather wrist wrap

BATTLE CHOKER

Jake continues to wear the necklace made from river stones during his training with Neytiri.

Leather from Jake's first sturmbeest hunt

A TOUCH OF TECH

In order to communicate with Neytiri and his children, Jake wears an Avatar (AVTR) Program throat comms array with earpiece.

A NEW LIFE

Willingness to prioritize the safety of his people over that of himself and his family is typical of Jake. When the RDA return to Pandora he must make some hard decisions. Believing that RDA forces are hunting him, Jake makes the tough decision to leave the Omatikaya in the relative safety of High Camp, a base hidden within the floating mountains, and start a new life far away with the reef-dwelling Metkayina clan. Whether or not the Sullys will be accepted by their hosts could depend on Jake's well-honed skills in diplomacy.

JAKE'S TOMAHAWK

Customized tomahawk better suited to Jake's Avatar body

Telescopic sight

MODIFIED SKEL M69 ASSAULT RIFLE

Skel AR stock replaced with a wooden one

FACT FILE

> Jake is trapped between two worlds. He tries to avoid using human technology, but he knows that when the RDA return he must use his rifle again to protect The People.

Assault rifle magazines stored in pouches



NEYTIRI

NEYTIRI IS MANY THINGS: a strong warrior, a highly skilled healer, and a proud mother. While she misses being the carefree adventurer of her youth, she appreciates that she now has a bigger calling. Jake and Neytiri's lives revolve around the responsibility they have to the Omatikaya clan. Following the Battle of the Hallelujah Mountains, the pair are heroes to the Omatikaya, and their world is a constant quest to find balance between the rainforest settlement of the Na'vi and the human settlement of Hell's Gate. The Omatikaya know how much pressure the couple are under in dealing with the humans at Hell's Gate, rebuilding the clan, and preparing for the RDA's return.

SPIRITUAL GUIDE

Neytiri's mother, Mo'at, is confident that Eywa has a plan for the Omatikaya. For that reason she is willing to consider adapting the Na'vi way of life. Mo'at does not understand her daughter's resistance to change, and often sides with Jake Sully in arguments, placing her faith in his leadership. Mo'at remains behind with Norm, Max, and the Omatikaya clan at High Camp when Jake, Neytiri, and the children leave for the reef. It pains her to see her daughter and family leave, but she knows, as *tsahik*, that her place is with the people. She does not know when, but she knows that she will see her daughter again.

DATA FILE

SUBJECT Mo'at
SPECIES Na'vi
AFFILIATION Omatikaya
HEIGHT 8 ft 7 in (2.62 m)

AMBER HEADBAND

The amber gem adds totemic value to the *tsahik*'s forehead bioluminescence, which is believed to have an ornate pattern due to her closeness with Eywa.



A NEW WORLD

Adapting does not come naturally to Neytiri. She has a really hard time getting used to the Sullys' new reef biome and learning the Way of Water from their hosts. The reef is completely different from the only world she has ever known—the forest. There, she was certain of the environment, her place within it, and her legendary skills.



TSAKAREM

Each clan has a *tsahik*, who is the keeper of the wisdom of herbs and sacred plants, conductor of sacred rituals, healer, and interpreter of the will of Eywa. Neytiri is next in line to become *tsahik* and is learning from her mother, Mo'at, who currently occupies the role. Normally, the first-born child of a *tsahik* inherits the role. As the second-born, Neytiri is still adjusting to the idea of being *tsakarem* (*tsahik* in training), following the death of her sister, Sylwanin. Neytiri has found solace in her deepening love for Eywa. While Neytiri presides over some ceremonies and has some official duties, her mother will remain the clan's *tsahik* until Neytiri is ready.



IKRAN-RIDING VISOR

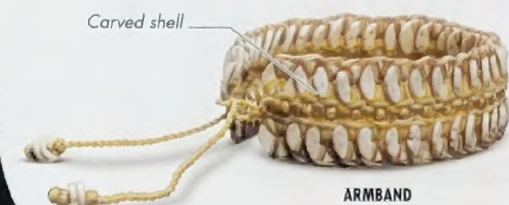


BONE COLLAR

Neytiri wears this bright and colorful top during raids on RDA trains.

FACT FILE

- > It is customary among the Na'vi to mourn for some time after the passing of their *ikran*. Neytiri did so, after the death of her *ikran* Seze.
- > Neytiri's views clash with some of Jake's. She opposes his view that Na'vi should be armed with the weapons of the Sky People.



ARM BAND

ORNAMENTS

Armbands, bracelets, cuffs, and decoration all form part of Neytiri's wardrobe. Some are holdovers from her Omatikaya wardrobe, while others are new from the Metkayina people.



BEADED CUFF

Colors inspired by those found on the *tsahik*'s garb

REEF STYLE

The Sullys' heavy rainforest clothing is unsuited to life on the reef. Their new home demands lighter and more biome-appropriate garb, like that worn by their Metkayina hosts. Neytiri retains some of her signature style while leaning into the marine bird leathers and reef flowers that make up the reef people's clothing.

KNIFE

Neytiri's knife has remained the same since childhood. It is made from obsidian and honed to a razor edge.

DATA FILE

SUBJECT Neytiri
SPECIES Na'vi
AFFILIATION Omatikaya
HEIGHT 8 ft 7 in (2.62 m)



NETEYAM

STRONG AND CONFIDENT, Neteyam te Suli Tsyeyk'itan is the eldest child of Neytiri and Jake Sully. He is favored by the clan as he is a natural athlete and hunter like his mother and noble like his father. When Jake and Neytiri must leave the younger children, they look to Neteyam to look after his siblings. He cares greatly for them, and while competitive with his younger brother, Lo'ak, he supports them all so they can succeed and shine. Neteyam holds himself to an incredibly high standard. In the same way that his brother lives in his shadow, Neteyam lives in the shadow of his father. He is always trying to prove his worth to Jake and ensure that his father recognizes his achievements and accomplishments.

DATA FILE

SUBJECT	Neteyam
SPECIES	Na'vi
AFFILIATION	Omatikaya
HEIGHT	8 ft 2 in (2.62 m)
AGE	15 years

Throat combs allow communication with his siblings

Omatikaya cummerbund

Leather armguard

ARROW

BOW AND ARROW

An expert at archery, Neteyam was the youngest Omatikaya to make a clean kill at the sturmbeast hunt.

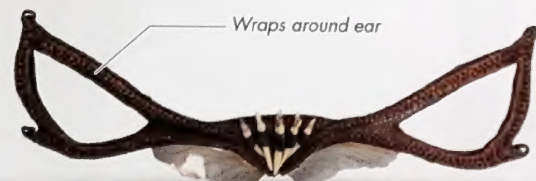
Bow made from the wood of the fallen Hometree

ARM BAND

WARRIOR CHILD

Neteyam excels at all things. His hunting prowess is nearly unmatched among the other young members of the Omatikaya clan, and his *ikran* flying is almost as good as his mother's. He wears the warrior's cummerbund of the Omatikaya proudly and strives to set an example for all of his siblings.

Leg guards worn while riding an *ikran* or a direhorse



IKRAN RIDING VISOR



BEADED CHOKER



Neteyam is relied on by his parents, and he often accompanies them on missions.



Turquoise pebbles

WOVEN CHOKER

Neteyam brings his woven choker with him to the reef. He made this important item in the classic style worn by generations of storied Omatikaya warriors, like Tsu'tey.

Bead representing the first lullaby that Neteyam remembers being sung to him

Omatikaya knife crafted with leather and waxed thread from the fronds at the top of a beanstalk palm

OMATIKAYA KNIFE

BRAIDED ARMBAND

SONG CORD

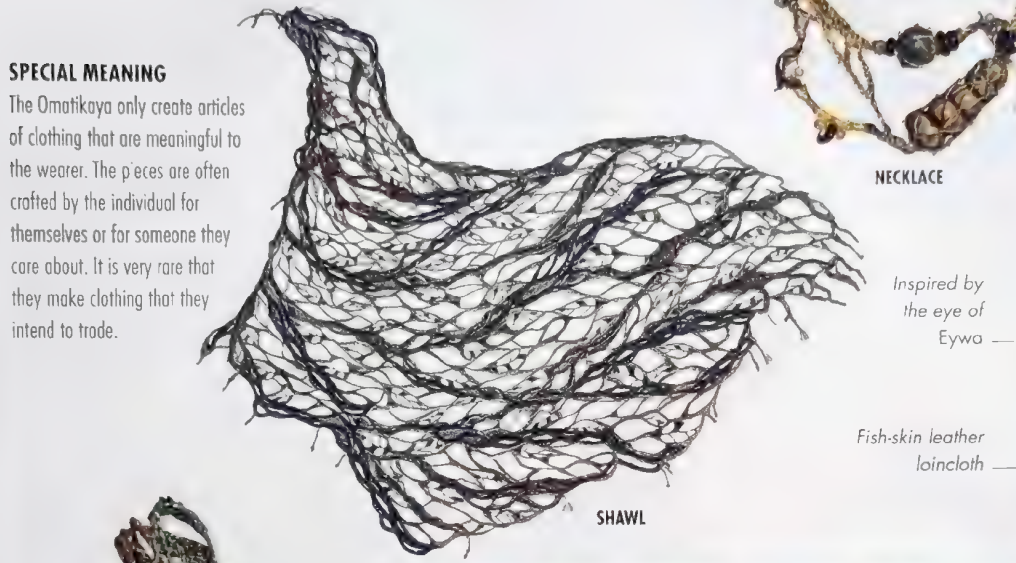
RISE TO THE CHALLENGE

With confidence and social skills in abundance, Neteyam forges a bond between the Sully children and the Metkayina kids and opens the way to friendly relations between the adults. Neteyam does all he can to ensure he, Lo'ak, Kiri, and Tuk don't aggravate the Metkayina.

KIRI

KIRI TE SULI KÌREYSÌ'ITE is an inquisitive and fiercely intelligent Na'vi who is a beloved daughter of Jake Sully and Neytiri. Her origins are shrouded in mystery. Not long after Grace Augustine's death, her dormant avatar was discovered to be pregnant, and Jake and Neytiri decided to adopt the child when she was born.

SPECIAL MEANING
The Omatikaya only create articles of clothing that are meaningful to the wearer. The pieces are often crafted by the individual for themselves or for someone they care about. It is very rare that they make clothing that they intend to trade.



Grace Augustine's necklace that Kiri always wears to remain close to her mother

Inspired by the eye of Eywa

Fish-skin leather loincloth



STATEMENT PIECES
Upper body garments usually carry some totemic value for the Na'vi. Whether it's a mantle representing their status in the clan, the silhouette of an animal's threat display communicating pride, or, as with Kiri, asymmetric patterns evoking nature, each individual makes a statement about their identity and how they contribute to their clan.

CHILD OF NATURE

Kiri is unlike any Na'vi or avatar the Omatikaya have ever encountered. From the earliest age she has had an unusually strong connection with Eywa—more than even that of a *tsahik*. She was able to bond with her *ikran* without even using the banshee bola. In fact, Kiri simply walked up to her intended *ikran*, locked eyes, and then it was over. The two were bonded and she made her first flight. While out in the rainforest, Kiri occasionally gets lost in thought and quiet meditation. Sometimes, on a task or errand, her siblings will notice that Kiri is missing. They often find her lying on the soft earth, eyes closed, feeling the pulse of Eywa under her.



Unkempt hair, a hallmark of being an explorer

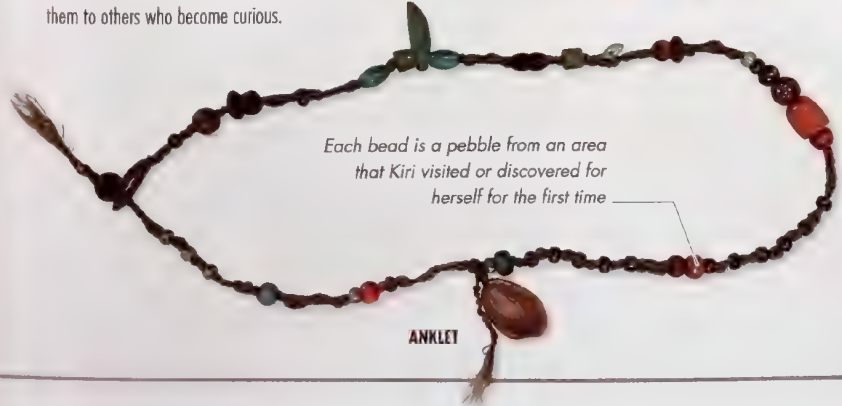
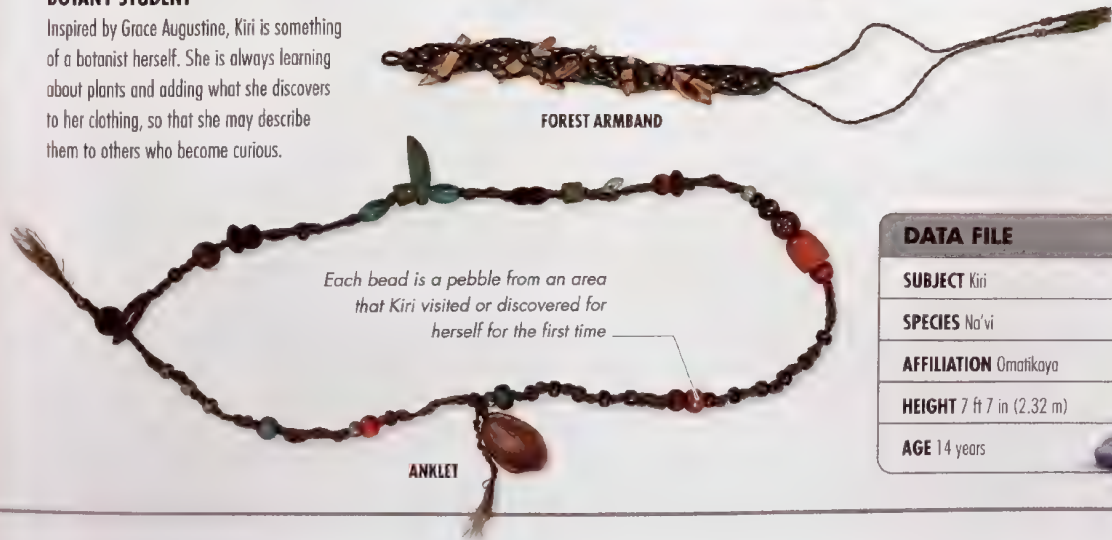


In the High Camp Biolab, Kiri looks upon the dormant avatar of her mother, Dr. Grace Augustine. Kiri feels a connection to her even though they have never met.

MEDICINE POUCH
Kiri is never far from her medicine pouch. This treasured object used to belong to her adoptive mother.



BOTANY STUDENT
Inspired by Grace Augustine, Kiri is something of a botanist herself. She is always learning about plants and adding what she discovers to her clothing, so that she may describe them to others who become curious.



GROWING UP

When Kiri was old enough, she was adopted. She feels a kinship to the Sully family, because they raised her, yet also a feeling of being set apart. A dutiful sister, Kiri takes care of her younger siblings, especially Tuktirey, but when possible she will leave them for a moment and go to the Biolab to visit with her biological mother. Kiri will watch old videolog footage of her and talk softly to the dormant avatar behind the glass, trying to understand her own place in the greater world.



Kiri's outfit bears similarities to the traditional garb of a *tsakarem*

DATA FILE	
SUBJECT	Kiri
SPECIES	Na'vi
AFFILIATION	Omatikaya
HEIGHT	7 ft 7 in (2.32 m)
AGE	14 years

LO'AK

SECOND SON OF Jake and Neytiri, Lo'ak te Suli Tsyeyk'itan has grown up feeling like an outsider in his own family, and in the Omatikaya clan at large. He feels different from his siblings Tuk and the golden child Neteyam. He has four fingers (instead of the usual Na'vi three), and he is considered more human than Na'vi by many. Hotheaded, brash, and impulsive, Lo'ak reacts by rushing into his experiences, trying to immediately rise to the level of his older brother. Lo'ak's closest sibling and confidant is his sister Kiri. They have become fast friends with the human boy Spider, and have found solace in each other's company as they have grown up together.

Unlike most Na'vi, Lo'ak has eyebrows, like his father



Ikran claw

NECKLACE



HUNTING KNIFE

Made from sharpened river crystal



KNIFE SHEATH

Hexapede hide

YOUNG HUNTER

Lo'ak has not gone through his *uniltaran* ("Dream Hunt") yet, so he does not wear the typical Omatikaya cummerbund.



Woven pattern taught to Lo'ak by Mo'at

Yellow inspired by the accent color of Lo'ak's ikran

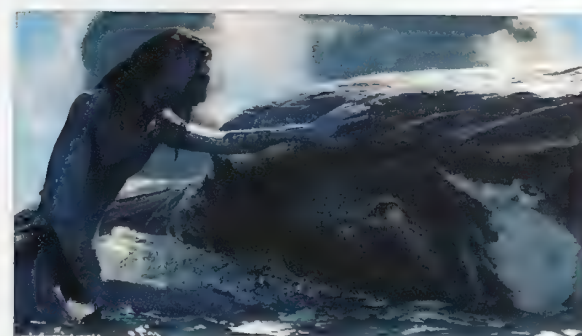
ARMBAND



ARMGUARD

IN THE SHADOWS

It's difficult growing up surrounded by perfection. Lo'ak struggles to deal with the looming shadow of not only his heroic and legendary father, Jake Sully, but also his older brother, Neteyam—the golden child of the Omatikaya clan.



Lo'ak has always identified with outcasts. After becoming lost at sea, Lo'ak is befriended by a *tulkun* named Payakan, who helps Lo'ak rejoin his family.

FACT FILE

Lo'ak is a constant companion to Kiri, who is also judged by others for her differences. However, she is a strong example to Lo'ak of how not to let others' judgments make them feel ashamed and unworthy.

DATA FILE

SUBJECT Lo'ak

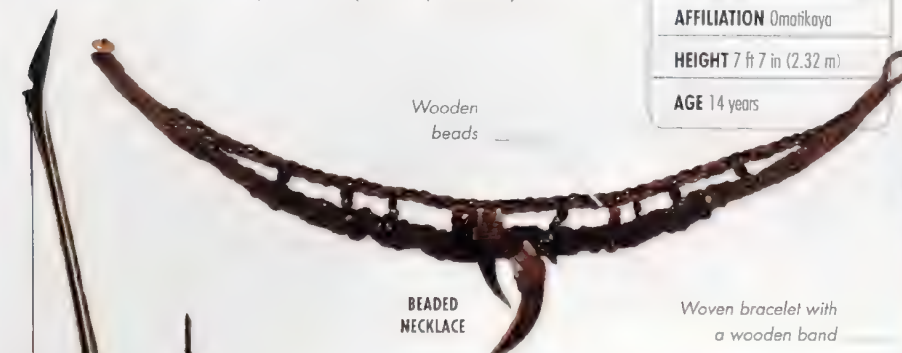
SPECIES Na'vi

AFFILIATION Omatikaya

HEIGHT 7 ft 7 in (2.32 m)

AGE 14 years

Wooden beads



BEADED NECKLACE

Woven bracelet with a wooden band



BOW AND ARROW



Largest stone was gift from Tukirey



POLISHED RIVER STONE HAIR BEADS

NEW ATTIRE

Lo'ak has swapped out his Omatikaya loincloth for one he made with the Metkayina, in part for ease of swimming and in part because of his growing connection with the reef. However, his knife and sheath are still carried on his person, and they serve him well in hunting and daily chores with the Metkayina people.

A FRESH START

On the reef, Lo'ak discovers an environment in which he can thrive. He may be a forest Na'vi, but he truly shines in the ocean and is able to define himself in ways he couldn't before. Under Tsireya's tutelage, Lo'ak excels at the various new skills, picking up breath-hold diving, swimming, ocean hunting, and *ilu* riding with ease. To his delight and surprise, he's even better than Neteyam. The only thing he's not especially good at is staying out of trouble.

ARMBAND



Bead memorializes the day when the Sky People arrived

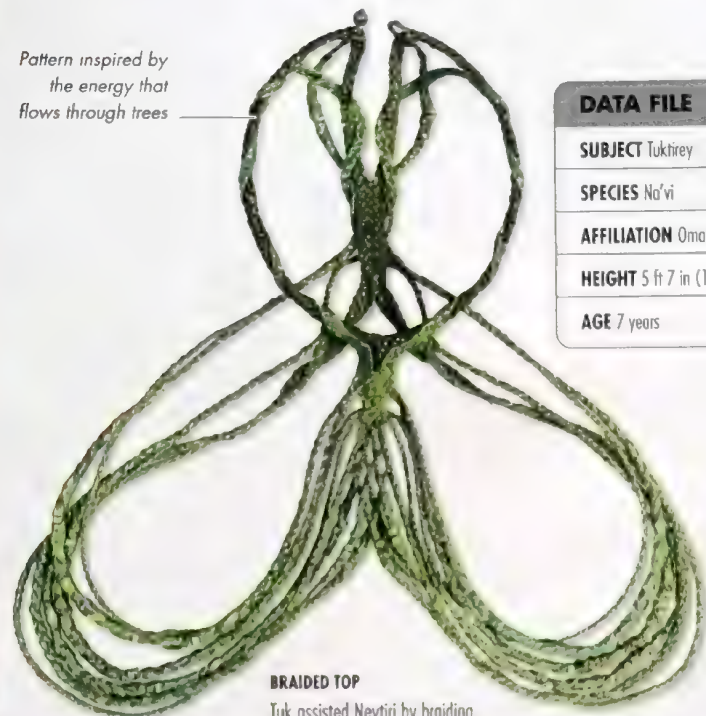
SONGCORD

TUKTIREY

PRECOCIOUS AND ALWAYS UNDER FOOT, Tuktirey te Suli Neytiri'ite, nicknamed "Tuk-Tuk" or "Tuk," is Jake and Neytiri's youngest child and was born in 2163. She has a particular habit of always finding herself in places where she shouldn't be. The baby of all the Sully children, she's the little kid her older brothers try to shake off. Tuk-Tuk is independent and demanding, forcing herself to be listened to among the older ones.



Pattern inspired by the energy that flows through trees



BRAIDED TOP
Tuk assisted Neytiri by braiding some of the strands for the top.



SHELL ARMBAND

DATA FILE

SUBJECT	Tuktirey
SPECIES	Na'vi
AFFILIATION	Omatikaya
HEIGHT	5 ft 7 in (1.7 m)
AGE	7 years

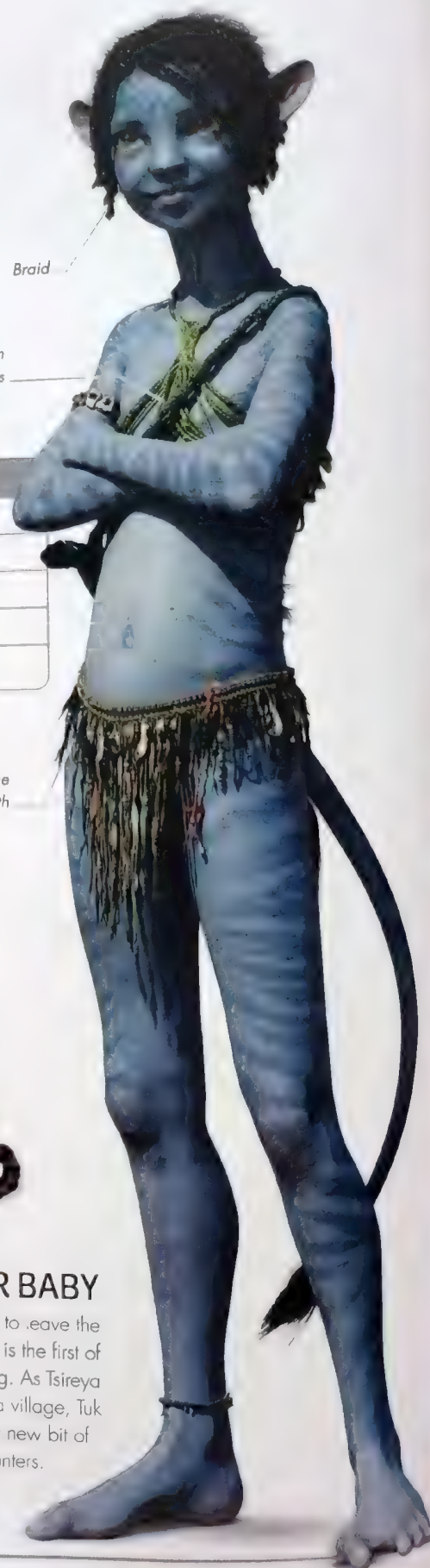
Woven from reef palms

Shell fringe loincloth

Woven and crafted by Jake as a gift

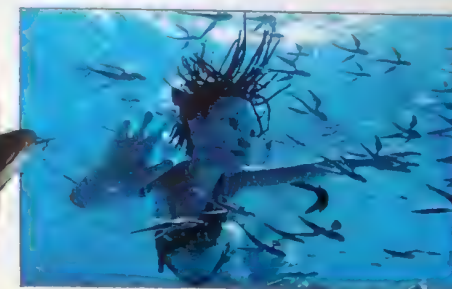
WATER BABY

Although initially saddened by having to leave the safety and comfort of the rainforest, Tuk is the first of the Sully children to adapt to reef living. As Tsireya shows the children around the Metkayina village, Tuk is delighted and surprised by every new bit of exotic ocean flora and fauna she encounters. She is particularly fond of the *ilu* ponies that live near the pelagic Na'vi.



Braid

Beaded feather necklace



Tuktirey is endlessly fascinated by the world beneath the waves, especially all of the amazing fauna, like these glider fins.

POSITIVE SPIRIT

Having grown up in the forest next to the humans at Hell's Gate, Tuk is used to experiencing cultures other than her own. For that reason she quickly bonds with the Metkayina, blending in easily with the other reef kids. Young Tuk is full of boundless love and completely open to the world.



ANKLET

CHILDREN'S JEWELRY

Bracelets and bands with beads and trinkets are among the first items that Omatikaya children weave. The materials can be passed down to them or found in the jungle while at play. Over time, the items may make their way to the child's songcord or be added to other garments as they grow older.

METKAYINA ANKLET

ARMBAND

Purple color, like that of a direhorse, suggested by her best friend, Popiti



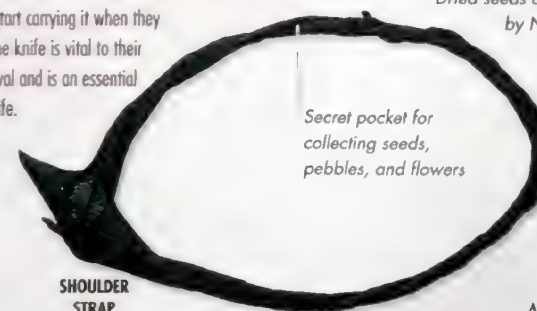
BLACK CRYSTAL KNIFE

The knife is the most important tool for a Na'vi. They start carrying it when they are children. The knife is vital to their everyday survival and is an essential part of their life.

Dried seeds collected by Neteyam

Secret pocket for collecting seeds, pebbles, and flowers

Marine algae collected by Lo'ak



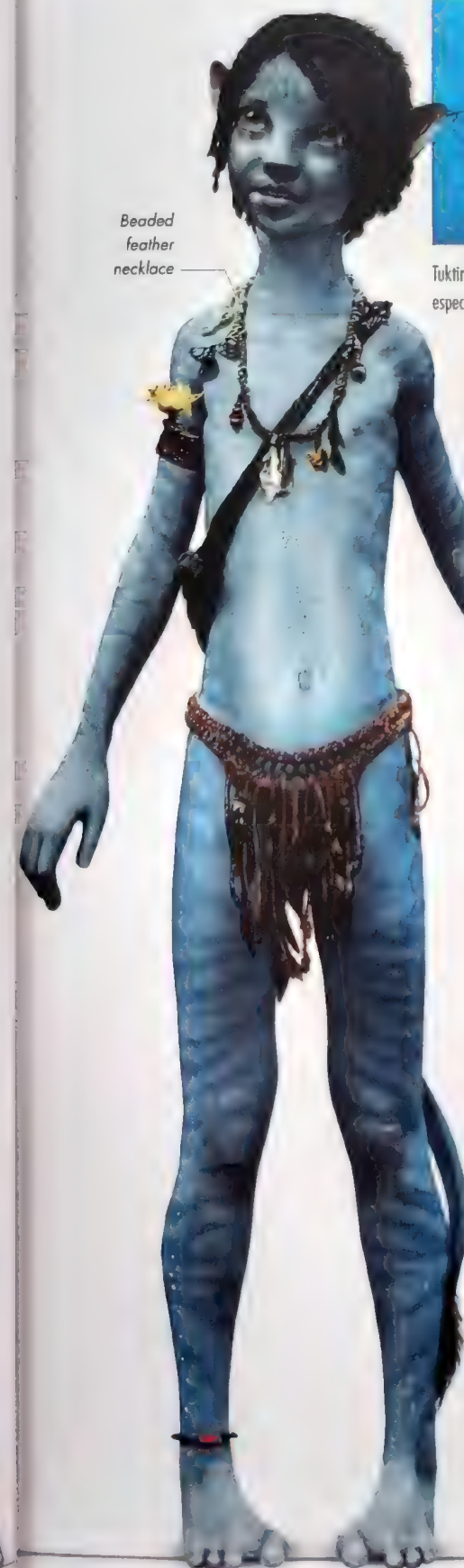
SHOULDER STRAP


FACT FILE

- > Tuk, like Neteyam, has the typical Na'vi three-fingered hand.
- > Since Tuk is too small to bond with her own *ikran*, she rides as a passenger whenever there is a need to fly.

SHELL FRINGE LOINCLOTH

Tuk's siblings know that she is excited by Metkayina culture, so they commemorate her experience by making a reef loincloth for her.



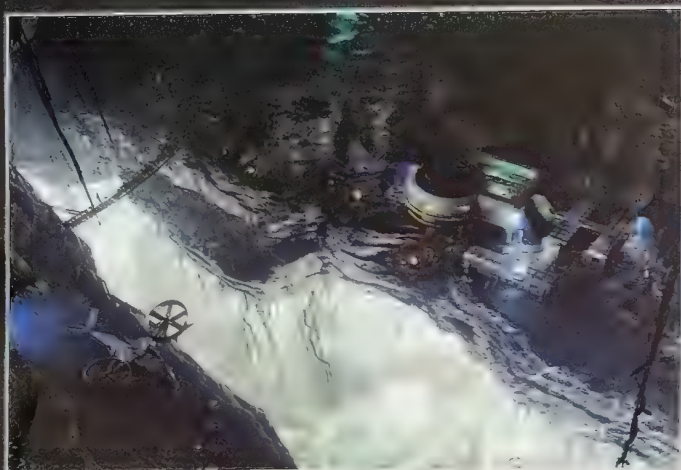


CHAPTER 2: THE OMATIKAYA CLAN

After the fall of Hometree and the expulsion of most of the humans on Pandora, the Omatikaya clan formed a new settlement on the outskirts of Hell's Gale. The clan's new village is a group of *No'vi marui*. When the dreaded day comes that the Sky People return to Pandora, the Omatikaya leader, Jake Sully, and the remaining clan members make the difficult decision to leave the rainforest. They seek shelter within a concealed cave system located in the Hallelujah Mountains, from which they regularly conduct raids on the RDA infrastructure and supply lines.

HIGH CAMP

A HIGHLY DEFENSIBLE cave system inside Mons Veritatis, a large floating mountain in the Hallelujah range, High Camp is a Na'vi stronghold that clan leader Jake Sully has designated as a place his people will retreat to if they need to hide from the returning RDA forces. The main grotto is entered not horizontally but vertically, by *ikran* flying up through a large crevasse in the floor. Later, it becomes the guerrilla base camp, and is equipped with a link shack and a science shack to support avatar as well as Na'vi activity. While High Camp is a last refuge, it also becomes a true home for the humans and Na'vi who live there side by side. With high technology and indigenous living placed in such close proximity, the tight quarters at High Camp actually enhance the resistance group's sense of community and combined culture.



HIDDEN REFUGE

The grotto that would become High Camp is hidden deep in the Hallelujah Mountains. When Jake discovered it, he knew it offered a unique hiding place from the RDA. With its natural entrances tucked beneath a great floating mountain, the grotto and its adjacent chambers are invisible to the prying eyes of RDA orbital imaging assets. Jake's flyers can come and go from High Camp totally undetected, provided they exercise the correct formation discipline. As such, this story arc makes a formidable base of operations for raids on RDA installations and assets, which Jake can hit hard before seemingly vanishing. Needless to say, pinpointing High Camp is high on the frustrated RDA's list of priorities.

DATA FILE

NAME	High Camp
LOCATION	Hallelujah Mountains
TERRAIN	Woven web surfaces in cave system
POPULATION	Human and Na'vi

SOCIAL SPACES

High Camp contains a campfire and several community spaces that provide opportunities for leaders to speak and allow the Omatikaya and their human allies to socialize together. Nothing binds a group like hardship and a common purpose, so it comes as no surprise that deep friendships are nurtured at High Camp.

AVATAR SLEEPERS
These marui shelter avator bodies, providing sleep hammocks and medical support.

BIO LAB
These inflatable structures house medical, research, and link functions.

FACT FILE

- Camouflages and Na'vi blankets convert damp cave floors into comfortable spaces. Dwellings are modular and lightweight so they can be moved in a hurry.
- Structural ropes for marui dwellings are anchored not only to cave walls but to small floating rocks, which also support power cables and lighting.



SHOWN HERE

AN CLEANING KIT

Maintaining weaponry under field conditions for years on end is not easy, but Jake and his rebels manage with the help of custom cleaning kits. This one is geared toward the Skel AR.



MARUI

IN THE OPEN-FLOOR CAVE known as High Camp, Omatikaya families and individuals have built freestanding woven structures called marui that are easily replaceable and repairable. They are made of wicker or wrapped with robust lashings over a compound curve or triangular frame. The exterior of the marui can withstand heavy wind and provides protection from water dripping off the cave ceiling. Inside, individual hammocks are suspended above the uneven rock surface in order to keep crawling insects away from sleeping Na'vi. While awake, the Na'vi can find comfort sitting together on a woven mat next to a warm cook fire.

An individual-size marui for a single occupant.

Support beam.

MARUI

CAVE ENCAMPMENT

High Camp is situated near one of the highest, most jagged mountains in the Fikiri Valley, a space where the mountain contains weathered-out deposits of floating unobtanium. The rocks are flux-pinned, which means they slowly maintain their position due to magnetic forces. The Omatikaya use the rocks to tie up and tension the roof of their marui with rope. The human systems for the cave use the rocks to affix electrical grids from above so that they can see in the dark. These lights illuminate a tableau of Na'vi and human encampments with an overlap zone of advanced technology and Omatikaya equipment.

TOUGH EXTERIOR

The woven backings of marui are made on a traditional Omatikaya loom.

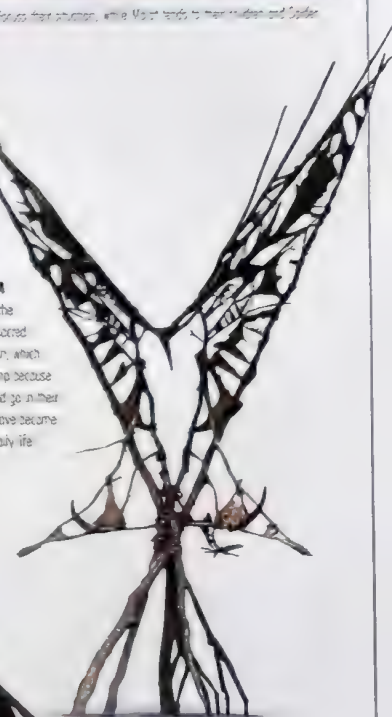
MARUI



Near the entrance to a marui, Jake Sully and Neytiri discuss their situation, while Neytiri tends to their children and Sully.

CLAN TOTEM

After the destruction of Hometree, the Omatikaya had to build new sacred totems. This totem honors the Ikran, which is especially fitting in High Camp because these mountain banshees come and go in their new home in the sky and have become indispensable to the clan's daily life.



OMATIKAYA FOOD

THE OMATIKAYA PRIDE themselves on their ability to prepare meat, vegetables, fruit, seeds, and spices in a myriad of combinations. The ingredients can be diced, mixed, and served on a leaf plate coated in natural oils and salt, or rolled up in an edible leaf and vine wrap called *nikt'syey*. These traditional food preparations can be eaten while hunting and gathering or at home among family. The meals are nutritionally balanced, and the animal that gave its life is only taken for the good of the clan and the Pandoran ecosystem.



IT TAKES A VILLAGE

While nurturing their babies, Omatikaya parents may prepare and eat meals separately from the clan gathering space. This enables them to promote better sleep for their child and to tend to them quietly when they wake up. The clan as a whole supports the family by offering them baskets of fruits and vegetables they've collected as well as protein from their hunts. The family is not expected to give anything in return; only to ensure that their children grow up as strong and healthy as possible in order to be able to contribute to their clan's overall survival into the next generation.

FACT FILE

- > The Omatikaya teach food preparation skills to their children through social songs with rhythmic accompaniment.
- > A style of song that works with food-oriented group tasks is heterophony—where a performer sings the same basic melody as the others, but joins in at different points, with different tempos and rhythms, adding textures and layers as they would with their meals.

Yovo fruit

FRUIT BASKET

Pandoran fruits are often collected in woven baskets made from willowlike rods and twine.



Mushroom steak served with fruit and wind-dried mucilage traded seasonally from a nomadic clan



PLANT-BASED DISH



Edible button octoshroom

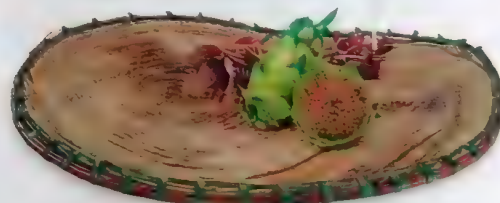
MEAL SERVED ON SPARTAN PLANT LEAF

Leopard palm fruit has taste described as buttery orange



MEAT-BASED DISH

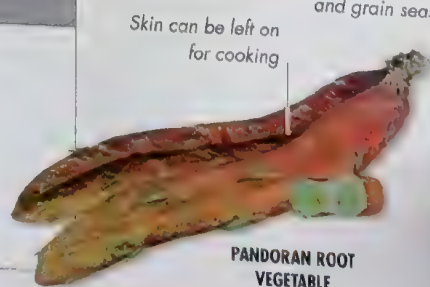
Antioxidant baby squid fruit with leaves



CHOPPING BOARD

Roasted sturmbeest served with hex root and beanpod potato over citrus and grain seasoned with rock salt

Utu mauti (banana fruit)



PANDORAN ROOT VEGETABLE



FRUIT BOWL

Repurposed seedpod

OMATIKAYA ITEMS

THE OMATIKAYA BUILD practical items and tools for everyday survival, totemic storytelling, and enjoyment. They use sustainable materials from the rainforest such as wood, minerals, gourds, reeds, and plant leaves, as well as animal hide, bone, and claws. As expert weavers, the clan also integrates patterns into their woven items, emulating what they see in nature: a complexity with a higher mathematical order. In general, rather than rigid 90 degree lines or grids, the Omatikaya weave and form in an holistic and organic way, with rounded edges, sacred spirals, and labyrinth-like patterns.

HEXAPEDE TOY

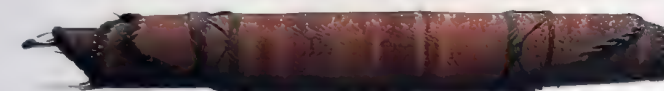
The Omatikaya encourage their children to make crafts based on animals they see in the forest in order to help better understand their forms and functions.

Exterior tie based on primary color of animal's skin



Tongue indicates animal is docile herbivore

Interior tie based on secondary color accent of animal's skin



NA'VI MAT



HAMMOCK

Inner lining made from water-resistant animal skin

CRAFT MAKERS

All members of the Omatikaya specialize in at least one craft-making skill. One Na'vi may be an expert in braiding tight bow strings while another can stitch leather to form a saddle. Through combined individual efforts, the Na'vi contribute to each other's resources, forming a cooperative system and clan bonding that has sustained the Omatikaya for tens of thousands of years.

BASKETS AND CARRIERS

Simple, functional baskets and carriers are often decorated, both to honor the natural world and also to display the maker's pride in their work. The items are mostly used in conjunction with a head or shoulder strap.



BASKET



WATER CARRIER

Snapped stem of gourd



TEA CUP



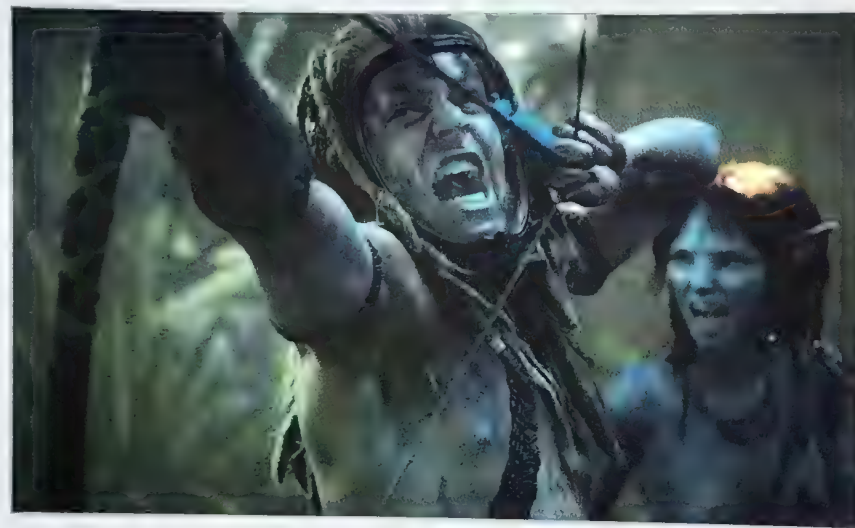
TEA STIRRER

SPIDER

MILES SOCORRO PREFERS BEING called by his nickname, "Spider." He gained this moniker due to his natural proclivity to climb, which he first exhibited as a baby. Both of his parents were killed during the Battle of the Hallelujah Mountains, and he was too small to be sent back to Earth in cryostasis. Miles remained on Pandora and was fostered by a human family at Hell's Gate that Jake allowed to remain. As Spider grows up, he starts tagging along with the Sully children on their adventures. This willful teenager has a big heart and a desire for adventure.



Captured by the recoms, Spider is taken to Bridgehead City and interrogated by Quaritch.



FRIEND OF THE FAMILY

Spider wishes for nothing more than to be a Na'vi and to run and live free in the rainforest. He's spent his life following in the ever-growing footsteps of the Sully children, and he tries his best to emulate their lifestyle—and their looks. He's grown his hair into Na'vi-style braids and paints his body with spartan-fruit dye to mimic the biological striping on the Na'vi body.



GEN ONE EXO-PACK BREATHER UNIT

AIR BREATHER

Spider uses an exo-pack breather unit. Like all humans on Pandora, he cannot breathe the air for more than two minutes before death. Multiple spare battery charges are an essential part of the kit to ensure Spider never runs out of clean air to breathe when he's in the rainforest with the Sullys.



BREATHING MASK

The mask has a two-stage demand regulator. It uses battery power to compress oxygen and nitrogen filtered from the atmosphere into a small high-pressure tank.



SPIDER'S KNIFE

Amber blade

OMATIKAYA CHILD'S BOW

DATA FILE

SUBJECT Miles "Spider" Socorro

SPECIES Human

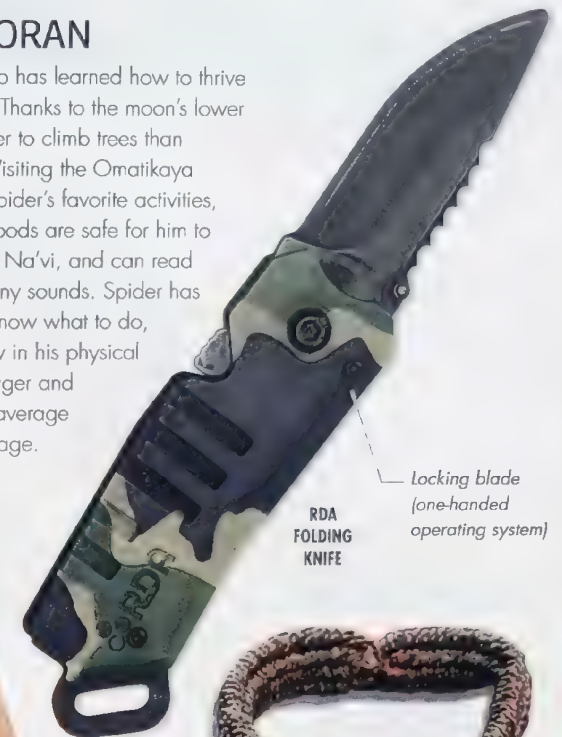
AFFILIATION Omatikaya

HEIGHT 6 ft (1.83 m)

AGE 16 years

A TRUE PANDORAN

Spider is a smart kid who has learned how to thrive in the Pandoran forests. Thanks to the moon's lower gravity, he finds it easier to climb trees than children on Earth do. Visiting the Omatikaya village is another of Spider's favorite activities, and he knows what foods are safe for him to eat. He speaks fluent Na'vi, and can read the trails and catch tiny sounds. Spider has to trust his body to know what to do, and the results show in his physical build—as he is bigger and healthier than an average human child his age.



Rainforest leaf decoration

OMATIKAYA ARMBAND

Made from rainforest fibers and hand-crafted beads



SPIDER'S ARMBAND

FACT FILE

- > Spider frustrates his foster family since he's constantly in the rainforest with the Sully children, and resists any attempts to get him to spend more time with the Hell's Gate human community.
- > Like the AVTR Program scientists he visits, Spider is more than happy to share anything he knows about Pandora, if someone asks.

DR. NORM SPELLMAN

THE HEAD OF THE AVTR PROGRAM Dr. Norm Spellman has many responsibilities, including to his family, the Omatikaya clan, and the humans of Hell's Gate. Of the remaining humans on Pandora, Norm perhaps has the greatest knowledge of, and passion for, Na'vi language, culture, and history. Norm remains Jake's right hand, providing another human perspective and vital advice for his decisions. With his ties to both communities, Norm is indispensable to the diplomatic efforts between the Omatikaya and Hell's Gate.

DR. MAX PATEL

Dr. Max Patel is one of the few humans that stayed on Pandora after the expulsion. He has remained one of Jake's most trusted allies and confidants. After working on Pandora for over a decade, Max is now considered to be the Hell's Gate chief scientist and researcher. The intervening 15 years since the expulsion of the RDA have left Max with dwindling supplies, which has challenged him and his staff to come up with creative solutions to both biological and technical issues that arise.



Omatikaya weaving

MAX'S BREATHING UNIT SATCHEL

DATA FILE
SUBJECT Dr. Max Patel
SPECIES Human
AFFILIATION Omatikaya

DOCTOR'S OUTFIT

A MAN OF TWO WORLDS

Norm wears a mixture of human, Omatikaya, and Olangi clan gear. Sadly, that clan was decimated in the Battle of the Hallelujah Mountains, and the survivors were absorbed into the Omatikaya clan.

RADICAL VOICE

Like Jake, Norm fears the return of the RDA and is ready to confront the corrupt power of the RDA to defend his home. After the RDA do return, Norm helps oversee the evacuation of the Omatikaya people from their settlement next to Hell's Gate to High Camp.

DATA FILE
SUBJECT Dr. Norm Spellman
SPECIES Human
AFFILIATION Omatikaya

FACT FILE
> Norm was able to locate and save his avatar's life during the Battle of the Hallelujah Mountains by applying trauma medicine before it bled out.
> Norm has authorized a database of all the AVTR Program's research in the hopes that one day pro-Pandoran scientists can learn from it.



Cut-off pants suitable for the rainforest heat



HEADSCARF

Made from one of the first shirts Norm wore on Pandora

Shaggy hair from spending days in his link bed



Human synthetic leather wrapping from Hell's Gate

Sturmbeest hide sheath

Knife constructed in Olangi clan style

NORM'S KNIFE

Pouch holds datapad, supplies, and other field research needs

Na'vi decoration

FIELD POUCH

SCIENCE AND ACTION

A scientist and researcher by nature, Norm has realized he possesses more active skills, too. His role in the final battle against the RDA emboldened him, and Jake's vote of confidence in him allowed Norm to take on more responsibility both at Hell's Gate and with the clans.

LEAD AVATAR

A diligent individual, Norm's natural tendency to prepare for the job at hand stands him in good stead when Jake makes Norm the new head of the AVTR Program, following Dr. Grace Augustine's death. Norm draws on his ability to work with individuals from all walks of life to lead the remaining scientists, avatar drivers, and support personnel. Jake relies on Norm to be his liaison to the wider scientific community at Hell's Gate. Norm spends as much time as possible connected to his avatar. He is always trying to find new ways to remain in his avatar body.



RDA WEB BELT



NORM'S SATCHEL

Sturmbeest hide, patterned after Olangi direhorse saddlebags



LEATHER ARMBANDS



OLANGI NECKLACE

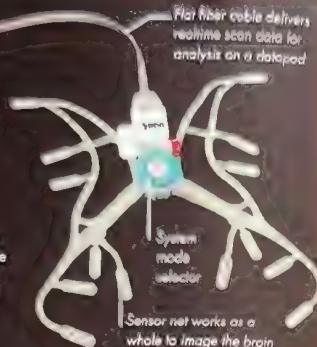
This necklace is made in the traditional Olangi clan style—a single choker element with a longer beaded piece.

HIGH CAMP BIOLAB

THOUGH IT WAS SET UP RAPIDLY in a remote environment, the biolab at High Camp is reasonably capacious and well-equipped for a variety of purposes. In addition to hosting link units and Grace Augustine's amniotank, the lab stands ready as a clinic and emergency room for the medical needs of the community. Since human "Earth" air is less toxic to Pandoran breathers than vice versa, a human gas mix is maintained throughout the lab so humans do not need to wear breathing masks. Na'vi visitors, however, require intermittent breaths of supplementary carbon dioxide from a breathing mask to survive in human air. Living in close community with the Omatikaya, Max Patel, Norm Spellman, and the other scientists have made inroads into understanding Pandora's natural world that were not possible in the Hell's Gate days, inspiring many new chapters in the books of Pandoran botany, zoology, and geology.



Fungal solutions in petri dishes are agitated before being cultured

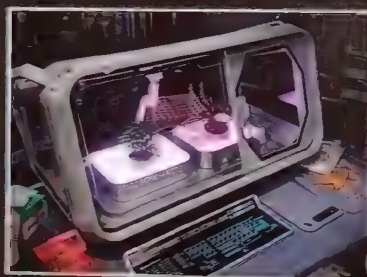
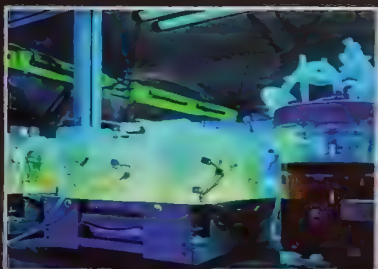


Fiber cable delivers real-time scan data for analysis on a datapad

Sensor net works as a whale to image the brain

DIAGNOSTIC HEADSET

Web-like neural sensors are designed to wrap onto a Na'vi-sized head, providing advanced brain diagnostics in situations where a more advanced scanner like the link torus is unavailable. Monitoring and maintaining the cerebral states of avatar bodies is critical to their health and the efficacy of the link system, so any human med tech at High Camp will have this tool at the ready. It has also turned out to be a valuable diagnostic tool for natural ailments of the brain that crop up in the Omatikaya community.



Many lab experiments involve live specimens, such as plants contained within a controlled Pandoran atmosphere cell. A robot arm manipulates the specimens, takes samples, and inserts electrical probes for network behavior testing. Every experimental result is fed into a series of computer simulations, which are then refined by further experiments in an iterative cycle.

THE EYWA NETWORK

Particular attention is given to the study of the so-called Eywa Network, the web of connections that links the plants and mycelial fungi of Pandora into a group mind. The scientists at High Camp are determined to unravel how it transmits information and communicates with the minds of Na'vi and animals. Out in the field, scientists conduct sorties via helicopter and *ikran* (using avatars) deep into a variety of the moon's biomes, always in search of undiscovered plant and fungal life. In the lab, samples are carefully catalogued and analyzed, using simple techniques and also sophisticated equipment such as electron microscopes, molecular scanners, and rapid genetic profiling machines. On powerful workstations, virtual models of network behavior are crunched around the clock.



Resistant casing

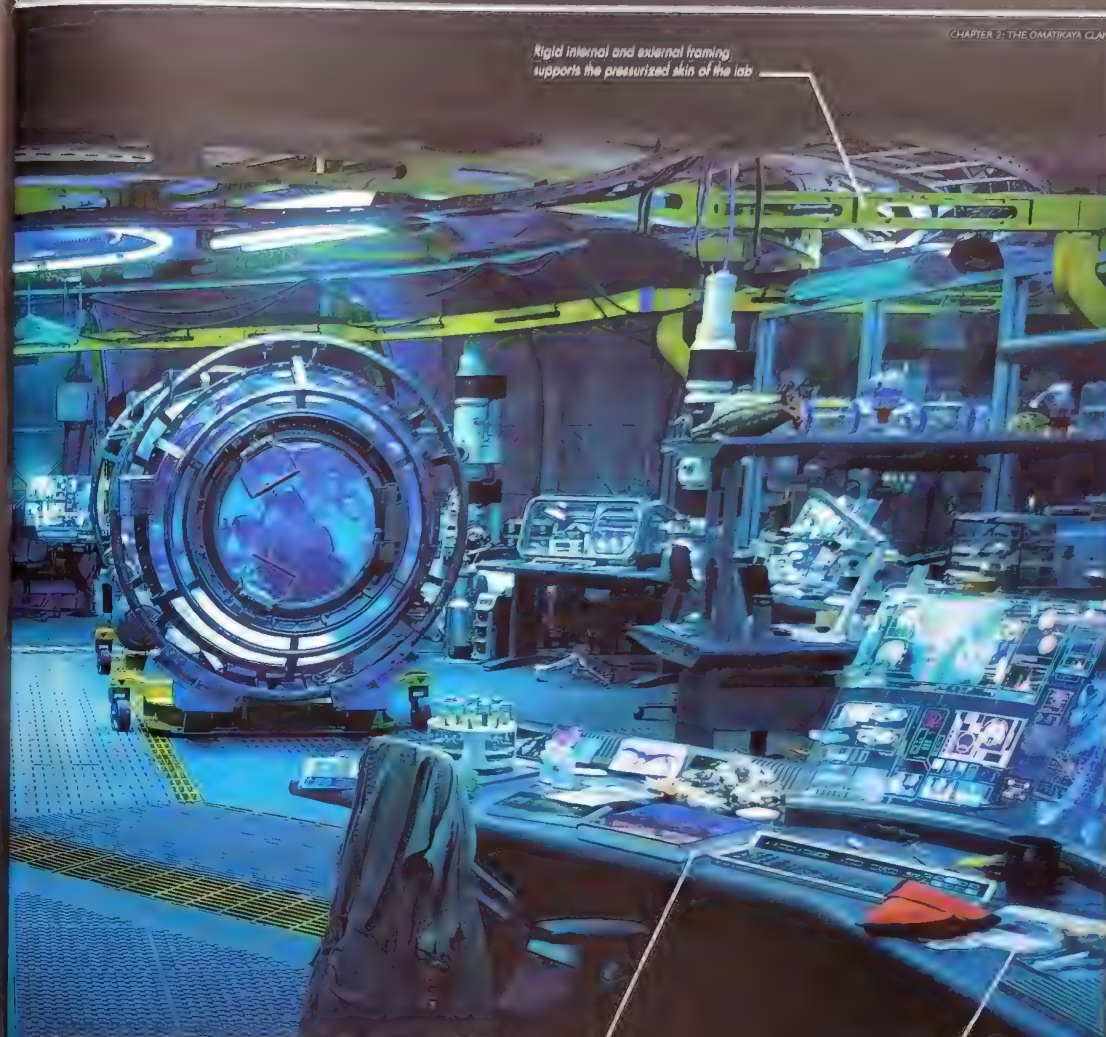


SURVIVAL IN THE FIELD

Taking care of avatars without access to the full equipment of an RDA base of operations is not easy. Luckily the High Camp lab infirmary is stocked with as many standard avian med kits as Max was able to stuff into a Samson helicopter.

SAMPLES FROM NATURE

Studies of Pandora require careful gathering and storage of scientific samples. Botanical samples are of special interest, especially when they demonstrate the networking behavior of the moon-wide web that produced the Eywa consciousness.



Rigid internal and external framing supports the pressurized skin of the lab

FACT FILE

- The biolab is built using the longstanding RDA system of modular, transportable, rigid framing supporting a positive-pressure inflatable skin. This membrane architecture, though not quite as rugged as the all-aluminum shock labs, has proven adaptable to the specific needs of the teams of scientists and avatar divers.
- An amniotank houses and maintains the health of Grace's avatar. The aqueous medium inside the tank is constantly filtered and kept warm, and the avatar is fed via a blood umbilical. Scientists are studying how to feed the body with naturally sourced nutrients when the AVTR medical stores from Hell's Gate run out.

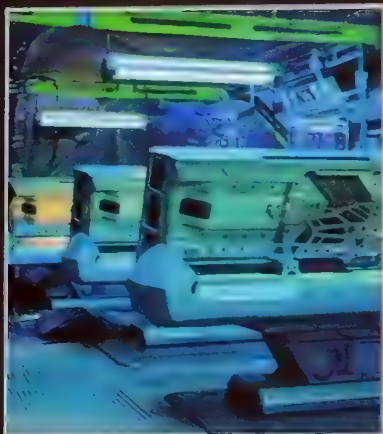
Books and paper are reliable materials in this rugged, remote lab



MEMORIOS
Dimensional photos capture the early days of the AVTR Program.

LINK BAY

FOR THE RDA, the Avatar (AVTR) Program made many contributions to scientific research. But it ended in bloody confrontation and a dramatic defection of avatar drivers from the RDA. It is for these drivers that Max Patel maintains the last surviving suite of avatar link units in a partitioned area of his biolab at High Camp. Hidden in the Hallelujah Mountains, this link setup allows drivers now aligned with Jake Sully's Omatikaya raiders to operate their avatars freely on Pandora. The absolute range of the link connection is unknown, but avatars have explored huge swaths of the moon, confirming that the link's technology may be totally distance-independent.



A far cry from the surgically clean Hell's Gate link room, the High Camp link bay still gets the job done. Four link units line the back wall, while several others are located separately in link sheds arrayed within the High Camp grotto. With no RDA engineering support, Jake's human allies must keep the link system running on their own. Elbow grease and ingenuity have kept things afloat, but dealing with the sensitive and aging equipment is a full-time job.

NEURAL CONNECTION

The link unit creates a connection between a human avatar driver and their avatar, which has been genetically engineered with a human-analogous brain and central nervous system. This brain/CNS remains naturally dormant and unconscious but can be activated by a "psionic link" system into a perfect parity with the brain of the avatar driver. Once the two brains have achieved full "congruency," the avatar body functions as a second body to the driver, allowing totally immersive and interactive "biotelepresence."

FACT FILE

- ▶ When not in use, High Camp avatars are stored and medically monitored in Na'vi style hammocks in an improvised menu dwelling.
- ▶ Between link sessions, High Camp avatar drivers take advantage of the link bay's kitchen and beloved table hockey game.

Neural induction probes, which help feed sensations to the avatar driver

Sensor cage provides biometric data to make sure the driver is medically safe

Link bed hides slim probes beneath special "memory gel" bedding

Large screens display the state of the link connection and provide real-time biometrics for driver and avatar

LINK-UNIT GURNEY

The bed of the link unit performs important functions but the key element is the toroidal unit arrayed around the driver's brain. This ring not only detects the brain's state at a neuronal level, but also induces most of the sensations that immerse the driver's consciousness in the experience of their avatar body.

Scan hood ring spins rapidly in operation

Emergency shutdown button

System-level control panel


DATA FILE

MANUFACTURER RDA Sci-Ops

MODEL L1-1

AFFILIATION Avatar Program

Drivers sometimes need a leg up!



CHAPTER 3: THE RDA

The RDA commander on Pandora is General Frances Ardmore, whose direct reports include former administrator Parker Selridge's replacement, Charles Stringer, among others. Ardmore also commands the Recam program (officially named Project Phoenix), which is spearheaded by Recam (recombinant) Miles Quaritch, his lieutenant, Lyle Wainfleet, and other Recam soldiers. Humans are under the RDA's version of martial law. The facilities at Bridgehead used to be a corporaterun operation with a security presence, but that power structure has now reversed. There is now little division between what is conceived of as military and the RDA.

← RESCUE

LANDING MODULE

THE RDA'S RETURN TO PANDORA is more accelerated than the steady development efforts that led to the Hell's Gate operation. Facing the prospect of immediate hostile interference, the RDA needs a way to establish new, heavily fortified bases of operation in a very short timeframe. As a solution, engineers propose Landing Modules. These ruggedly built craft are designed to transport much heavier payloads than would be possible using shuttles. Landing Modules can carry all the equipment needed for clearing land, building on site, and maintaining defensive perimeters. Towed to Pandora by a formidable fleet of specially equipped Interstellar Vehicles (ISVs), an invasion force of Landing Modules would be dropped as "Sling Loads" by the starships themselves. Instant dominance on the ground, with no shuttle reentry required.

Module height is equivalent to a 40-story office building



INVASION FLEET

The RDA fleet sent to retake Pandora consists mostly of ISVs carrying Landing Modules. This method of delivering personnel and heavy material is faster and more efficient than using Trans Atmosphere Vehicle (TAV) shuttles.

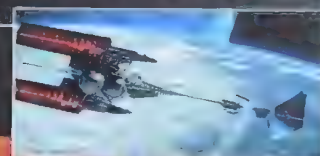
SLING LOAD

Each Landing Module can be packed with different, customized loads. Typical first-wave landers contain bulldozers and roadheaders for clearing and leveling a landing site. A variety of military assets are also delivered upfront to protect building work. Subsequent loads carry modular architectural systems and temporary defense walls, as well as equipment for construction, on-world materials extraction, and 3D print manufacturing. Most Landing Modules contain human personnel, housed in cryosleep units monitored on the long journey by a small team of med techs.

Reflective shielding with micro-robotics thermally manages the Sling Load during its long space journey and protects against engine radiation during descent.

FACT FILE

- Housed for so long in the proximity of fueled heavy machinery, some Sling Load personnel wake from cryosleep with dreaded "dorm breath."
- Core is taken in the efficient packing of machines and materials into each Sling Load, which functions as a kind of giant vending machine.



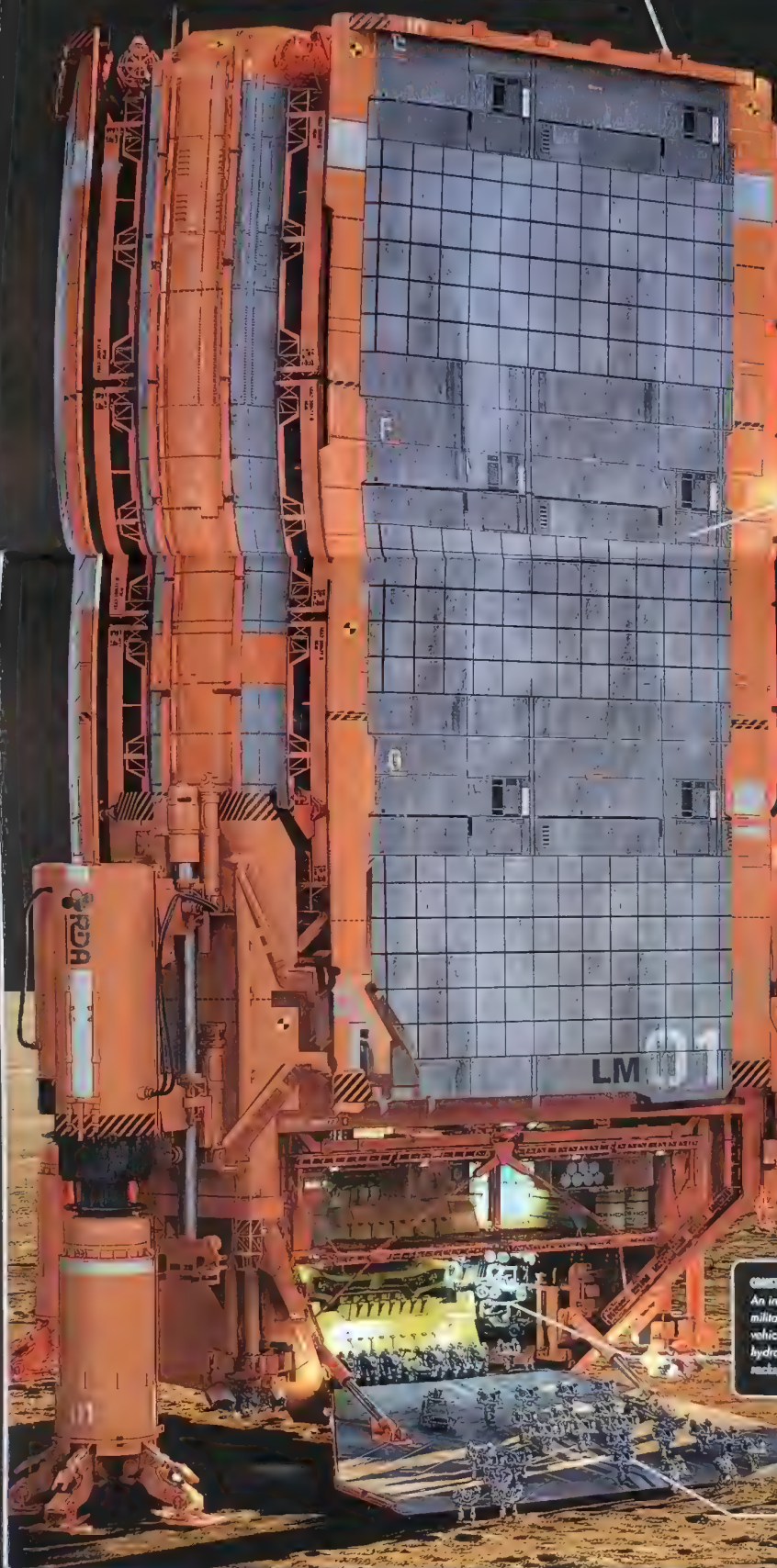
LAUNCHING 1001
Huge stack absorbing pylons with adaptable feet deliver module contents safely to ground.

DATA FILE

MANUFACTURER RDA
MODEL Landing Module
APPROXIMATE RDA CODE-REV
HEIGHT 577 ft (176 m)
MAX SPEED Towed by ISV
CREW Up to 300
WEAPONS Two X20460 Turrets; 40 mm submachine; AG-MFR 335 missiles

CONSTRUCTION VEHICLES
An invading army of military construction vehicles are stowed on hydraulic lifts and racks, ready to deploy.

TRAP DEPLOYMENT
Heavily armed AMP Suits and troopers fan out rapidly to establish the security of the Sling Load landing zone.



INVASION FORCE

THE RDA FORCES, led by General Ardmore, arrive on the ISV *Manifest Destiny*. The *Manifest Destiny* is sent, along with nine other inbound ships, from a dying Earth to establish a new home for humanity on Pandora. However, Jake Sully and the Na'vi refuse to give up their moon without a fight. With battles that rage from the low-lying orbit of space to the depths of the Omatikaya jungles, Ardmore and her team chase down and hunt Jake and his family. Jake's forces have already partially destroyed Hell's Gate so the base is of no strategic importance to Ardmore, who instead begins the preparations on-site for the construction of Bridgehead City.

SHOCK AND AWE
The mass destruction of Hell and Icarus is a shocking sight for Na'vi to behold.

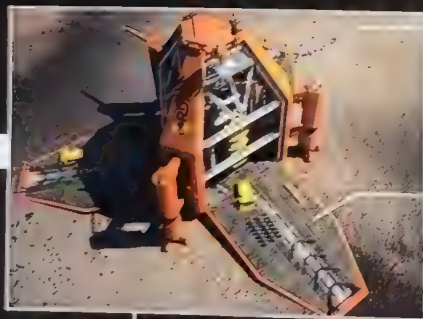
Thermal shielding protects module from engine plumes



Sling Load landing modules are equipped with landing lights and heavy, articulated landing legs. They resemble a cross between a spacecraft, an office building, and an oil rig.

FACT FILE

- The invasion of Pandora by Ardmore's Expeditionary Force is sanctioned at the highest levels of government on Earth, and sold to the public by a massive disinformation campaign.
- Jake underestimates how close Earth is to total collapse. His models are based on uranium, and don't factor in the new agency to harvest the valuable compound *amrita*, or Earth's need to mine for its own survival.



Module must protect against planet conditions and empty space

Massive ramp discharges AMP Suits, troopers, and heavy equipment in huge numbers

PROTECTIVE LANDING MODULE



SLING SHOT

A host Interstellar Vehicle (ISV) hovers in the sky using its 1.5g antimatter engines, while an enormous winch with miles of cable lowers a landing module to Pandora's surface.



A defensible perimeter is the first priority for RDA forces. Bulldozers are dispatched immediately to clear any and all debris that might provide cover for the enemy. This prepares not only the Bridgehead build site, but also the kill zone, which will be permanently maintained to defend the city. Timequips are deployed into the burning hellscapes in specialized fire suits similar to those used by volcanologists.

BRIDGEHEAD SATELLITE MAP

ROUGHLY THE SIZE AND COMPOSITION of Iona Beach. Containing the RDA's new flagship industrial plant, it is a base for a city. Bridgehead is a city larger than the other hell worlds and lives up to its name as a city built on the ruins of a human civilization on Pandora. The experimental "Lunar tower" is being built by the military to serve as a power for a juicy contract. Considering the military's interest in the RDA, CONDEV, a new company, is being formed to develop the infrastructure of the base. The military is also planning a long-term plan for the base, which will be a major part of the RDA's future on Pandora.

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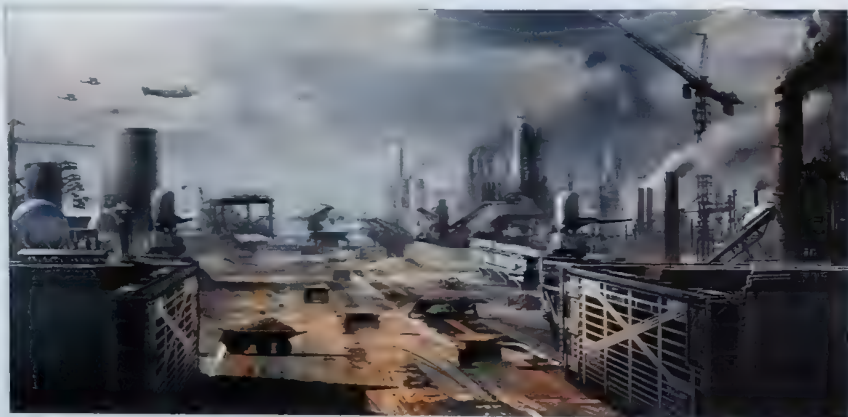
DIAMETER OF CITY CORE 4 miles (6.4 km)

DIAMETER OF KILL ZONE 10 miles (16 km)

WIDTH OF KILL ZONE 2 miles (3.2 km)

ACCESS 3 land gates; 2 sea gates; 1 river gate

TARGET POPULATION 2 million
(upon completion)



CITY OF A THOUSAND CRANES

For several years Bridgehead will be in a constant state of megaprojects, but productive output of materials should be one mark of the long-term plan. All heavy construction materials such as steel and concrete are extracted on Pandora, so getting metal mines, aggregate quarries, and concrete plants online is a top priority, allowing the construction behemoth to rise.

FACT FILE

- > Bridgehead has nearly 19 miles (30.5 kilometers) of defensive walls.
- > The defensive perimeter incorporates incredible firepower, including a variety of gun and missile systems, some of which are installed on massive concrete pylons.



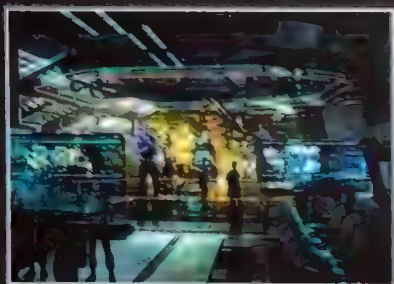
KILL ZONE

Bridgehead requires protection from enemy warships and other forces, so the main wall is the main defense. Protecting Bridgehead in the regard is the kill zone, a strip of land, with two miles (3.2 km) wide, between the city wall and the natural treeline. Regularly treated with herbicides and defended with automated weapons, this strip of death that was once a forest keeps Eywa and her vast network of sensors and tongs in the flora. The killing of Eywa and her army is the main goal.



BRIDGEHEAD OPS CENTER

BRIDGEHEAD'S MOST FRENETIC hive of human activity is its expansive, high-tech Ops Center, where civilian and military personnel work hand-in-hand to coordinate the RDA's efforts on Pandora. From mining and superspeed construction to Sec-Ops defense and escort functions, everything is planned and controlled here in an airport terminal-sized communications center bristling with complex data displays. Serving military needs, the Sec-Ops Armor Bay is an immense hangar stocked with equipment used to maintain and equip Bridgehead's huge fleet of military vehicles. Within the more refined Sci-Ops campus, the Neuralab showcases the most advanced neural scanning and stimulus system that RDA scientists have ever operated.



A large grid of holograph projects is viewed below a glass floor to produce a "HoloFloor" volume. Some distortion occurs as operators walk through the imagery, but ambient emitter coverage minimizes distracting visual artifacts. An overhead camera/sensor ring tracks the body and head movements of HoloFloor users to allow interaction datasets and UI elements. Benefits and personal halo devices can "walk" with the HoloFloor, passing information to and from floating halo interface panels.



EAST WING

The East Wing is primarily devoted to operations within Bridgehead: CON-DEV construction, Sec-Ops perimeter patrol and defense, airfield traffic control, and material logistics.

SEC-OPS ARMOR BAY

From AMP and Skel Suits to ground assault vehicles, SeedWings, and Kestrels—it flies, rolls, or flies for Sec-Ops it gets maintained and, in some cases, parked in the Armor Bay. Weapons technicians work hard to keep gun and missile systems functioning optimally in the moon's tropical environment, and engineers perform repairs on vehicles that have sustained damage from contact with Pandoran forces.

DATA FILE

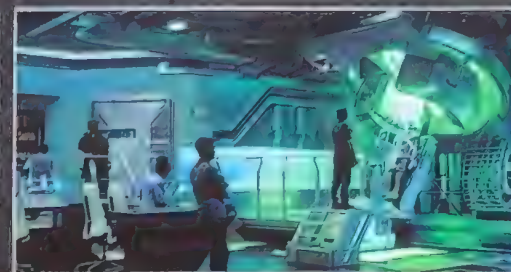
NAME: Bridgehead Ops Center
CIVILIAN PERSONNEL: Approx. 180
SEC-OPS PERSONNEL: Approx. 180
HOLOGRAPHICS: 1 HoloFloor; 2 Carbonica Ops
DISPLAYS: 4 main types, pseudohalo glass
DATA BACKBONE: Titan 7 VOS
DATA SOURCES: Vehicle com and telemetry; collected VVO (volumetric visual data); archives

COMMAND CORE

The primary command zone of this RDA nerve center is the HoloFloor and adjacent consoles. In this hot spot, data from all over the RDA's operation—video feeds, maps, GPS vehicle traffic, and archived or live 3D scans of environments—is arranged on the fly by skilled technicians to facilitate the strategic and situational awareness of senior command staff such as General Aidmore. With all the necessary information in front of them, those involved in complex operations or events can review options and make things happen.

NEUROLAB

DRP's NeuroSkel E7.21 scanner is the centerpiece of this high-tech medical suite. Brain data is collected and fed to a real-time walk-in halo display, then analyzed further at a specialized workstation.



SOUTH WING

The South Wing is primarily devoted to operations outside Bridgehead: mines, pipelines, maglev material transport, and heavy remote vehicles.

At 30 ft (9 m) long, the HoloFloor provides a rich, immersive data environment.



BRIDGEHEAD OPS CENTER HOLOFLOOR

Boasting a holographic volume measuring 30 in (76 cm) in length, 24 in (61 cm) in width, and 18 in (46 cm) in height, the new Ops Center at Bridgehead supports collaborative review of operational and tactical data in a totally immersive way. Civilian and military personnel can step right into their data in all its complexity and manipulate it in real time to facilitate rapid and effective command decision-making.

FACT FILE

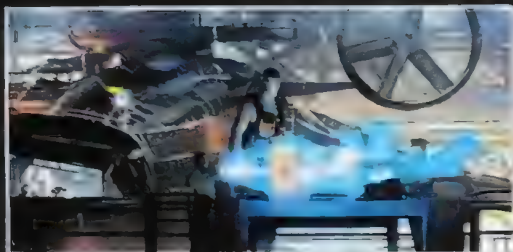
- Other Bridgehead workspaces include additional labs, manufacturing sheds, and towers/hangars for directing and maintaining swarming assets.
- Laboratories are gathered together in a Sci-Ops campus, with strict security to protect the delicate and secret work going on within.

BRIDGEHEAD NEUROLAB BRAIN IMAGING BOOTH:
The RDA's technology for sensing and manipulating neural states in a brain sees impressive implementation in the AVTR Program's link system, but the Neurolab at Bridgehead is at another level. Featuring a state-of-the-art NanoSect scanner that can extract visual memories from a subject in near real time, it also displays brain states like never before by using a walk-on HoloFloor.



SHIPYARD FACTORY 3D PRINTING

EXPLOITING AND COLONIZING PANDORA requires an incredible tonnage of material and equipment, most of which cannot practically be shipped to the new world by ISV. Transporting heavy materials requires accelerating them to 70 percent of the speed of light (and decelerating them, too), so harvesting and building is done on-world wherever possible. The key to a quick and efficient strategy is rapid manufacturing, primarily enabled by advanced 3D printing techniques. With metals and petrochemicals extracted from Pandora, 3D printers can churn out vast numbers of components for vehicles, weapons, robotics, data equipment, and even buildings, which are then fed into rapid, highly automated assembly lines. With minimal human intervention, such factories can produce a veritable army of assets to aid in the reconquest of Polyphemus' moon.



Advanced manufacturing extends from tiny quantum computing components all the way up to enormous vehicles such as the SeaDragon, seen here. While smaller items might be built almost in their entirety within the bed size of a 3D printer, large vehicles must be made in slices, which are then combined using overhead gantries and robotic swarm welders. A holographic interface shows 3D print technicians the progress being made on individual slices and components.

BUILDING WITH LIGHT

Metal components such as ship hull sections are made by a high-precision, magnetically lensed implementation of DLD (Direct Laser Deposition). In this process, a laser print head rapidly heats metal powder and deposits it as molten metal on the build. Successive thin layers of cooling metal build up to become a solid metal part. Parts requiring extreme precision can then be machined as needed, but in most cases the finely resolved raw 3D print can be used directly. 3D printers are also used to print plastics, composites, and even complex electronics.



High output gantry printers have multiple print heads that must coordinate

Precise motors and constant calibration are required for accurate parts

Metal powders are fed to the print head via pressurized tubing

Freshly printed metal is white hot, but cools rapidly, ready for overprint

FACT FILE

- To minimize assembly, some assets are 3D printed all at once, using multiple print heads to interweave totally different materials.
- Not all RDA equipment can be printed on Pandora. Sophisticated quantum electronics and other microscale components are shipped from Earth.
- While manufacturing is as automated as possible, human assistance is always required to deal with inevitable unexpected problems.
- Bridgehead's largest printer, shown above, has an enormous build volume of 220 ft (67 m) long x 95 ft (29 m) wide x 45 ft (14 m) high.

CONSTRUCTION

THE CONSTRUCTION OF BRIDGEHEAD and its supporting outposts is larger than anything the RDA has attempted on Pandora. Getting it done requires a blank slate attack on the logistical challenges, and what emerges are innovative building techniques and the need to rely on heavy automation at all scales. Overseen by the RDA's CON-DEV (Consolidated Development) wing, the process is heavily robotic and algorithmic, doing away with a RDA remote vehicles controlled by human operators. From robotic raw material extraction, through high-tech manufacturing, and then on to swarm assembly of enormous structures, the new style of RDA construction is productive and highly organized.



Modular inflatable temporary structure

Telescoping crane booms give maximized reach over large areas



FRONTIER TOWN

Contrasting with the lush, humid jungle of Pandora, Bridgehead is an urban middle ground, a place where the frontier town of the development is built with the help of people embracing and forging new lives on their home.

Gasbag protection bars



CONSTRUCTION BLIMP

With the ground teeming with activity, large loads are often moved by air. Lift systems can hover almost indefinitely and lower massive payloads right on target.

Handlers can pick up material directly or convert to cabled lifting hooks

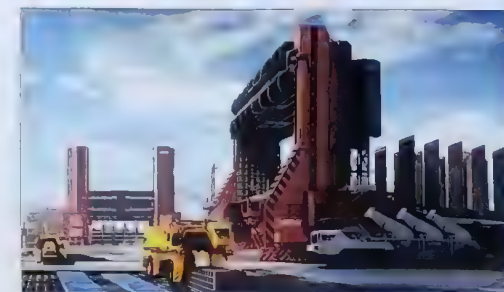


DATA FILE

MANUFACTURER	FDM Heavy Equipment
MODEL	MC-RA 220
AFFILIATION	RDA CON-DEV
SIZE	326 ft (99 m)
MAX SPEED	67 mph (108 kph)
CREW	1 remote pilot or fully automated

MACHINES FOR BUILDING

It takes a variety of vehicles and technologies to make Bridgehead construction work. Heavy lift blimps and nimble robotic cranes loom over robotic swarm assemblers and hulking yellow AMP Suits, while humans drive a variety of ground utility vehicles. Hundreds of tower cranes stack prefabricated structures into enormous power and processing plants, while a web of high-speed maglev train lines delivers materials and robots to exactly where they are needed. To get operational buildings and dormitory housing up rapidly, in situ 3D printing of concrete architecture and components is essential, as is the use of lightweight modular inflatable buildings.



Concrete buildings and components are 3D printed



Hubless wheels with integrated direct electric drive

Sensors feed to a networked computer "brain"

SWARM ASSEMBLERS

RDA CON-DEV'S LATEST-GENERATION



Hidden fans keep batteries cool inside rugged metal shell

BIG QUAD FOLDS UP FOR STORAGE AND RECHARGING

Different tools and effectors at different ends of the vehicle allow for multitasking



HEXBOT LIGHT

This mini swarm assembler packs powerful functionality into a small package. Handy rolled up to carry parts, the HexBot Light is fastest a super-speed builder. Its focus is welding, grinding, riveting, and even painting—and what it lacks in size it makes up for in efficiency. Quick feet and high-priority access to the swarm control protocol keep this little bot from getting swamped by bigger ones.



HEXBOT HEAVY

The workhorse of the assembler fleet, the HexBot Heavy is a multirole swarm assembler around the size of a large dog. Able to carry medium-size material and perform nearly all weld and fastening functions, it is equally at home on the ground as climbing up tall structures. Insectlike gripping toes and suction devices give grip on any surface, including vertical.

Limbs are carefully weatherized to function in mud and other rough conditions



Suction grip frame for handling heavy sheet materials

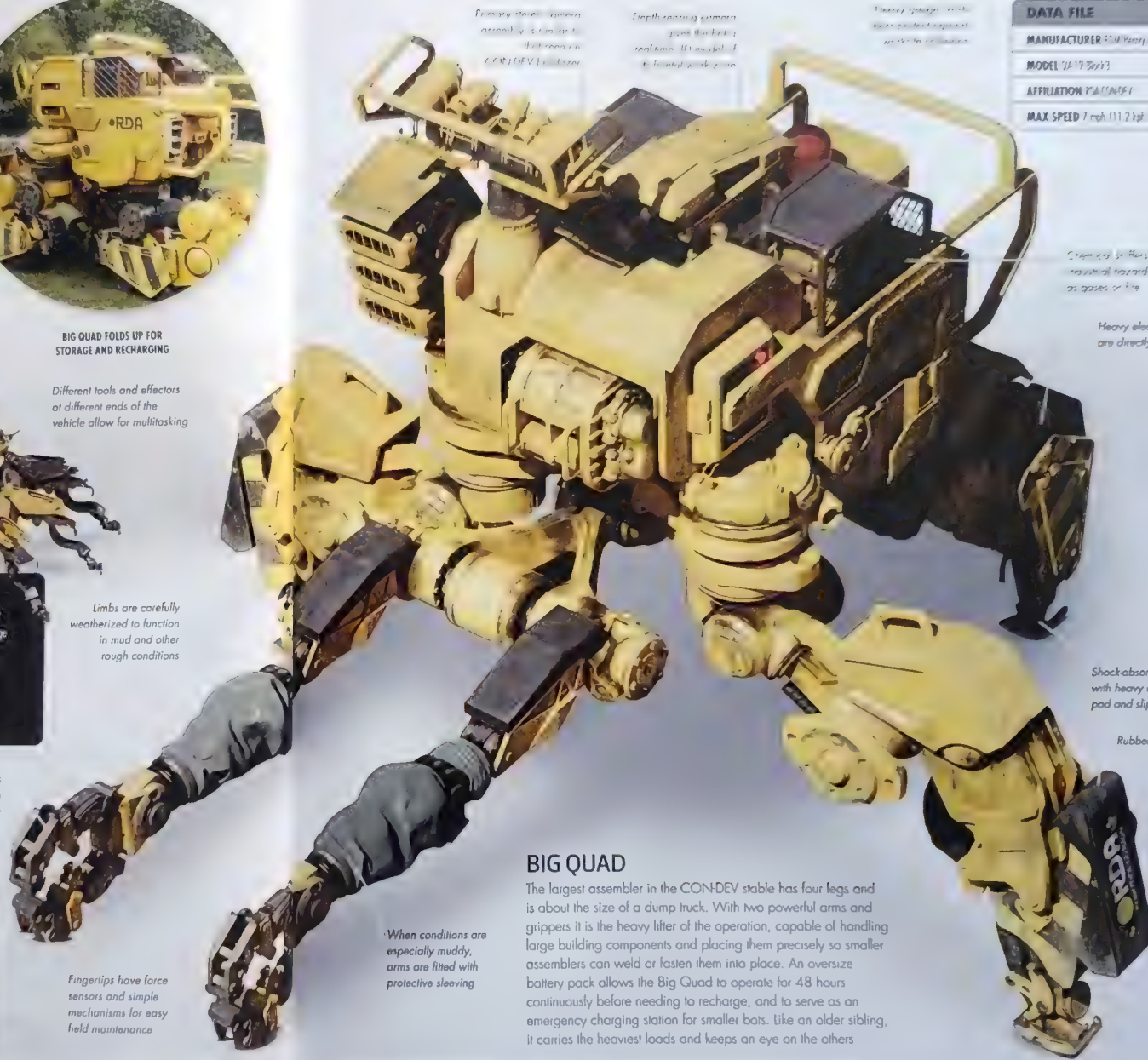
Adaptable flatbed keeps a tight hold on construction materials at any work angle

Multipurpose grippers can lift heavy parts with surprising dexterity

CONSTRUCTION MATERIAL HAULER SUPPORT BOT

The hauler hauls the team equipped with fresh materials and parts—pipes and fittings, shafts and panels, utility components, and myriad fasteners to put them together. A busy worksite demands several haulers, each supported by many smaller assemblers hungry for the parts needed to complete their next tasks.

Fingerlips have force sensors and simple mechanisms for easy field maintenance



Primary structure camera assembly is similar to those seen in CON-DEV's other bots

Lengthening summer joints that let the machine fit through tight spaces

Heavy gauge steel frame protects against possible collisions

DATA FILE

MANUFACTURER RDA Heavy Equipment

MODEL J219 Series

AFFILIATION RDA/MSF

MAX SPEED 7 mph (11.2 kph)

Chemical buffers detect potential hazards such as gases or fire

Heavy electric motors are directly integrated

Shock-absorbing feet with heavy rubber pad and slip sensors

Rubber crash bumper

BIG QUAD

The largest assembler in the CON-DEV stable has four legs and is about the size of a dump truck. With two powerful arms and grippers it is the heavy lifter of the operation, capable of handling large building components and placing them precisely so smaller assemblers can weld or fasten them into place. An oversize battery pack allows the Big Quad to operate for 48 hours continuously before needing to recharge, and to serve as an emergency charging station for smaller bots. Like an older sibling, it carries the heaviest loads and keeps an eye on the others

When conditions are especially muddy, arms are fitted with protective sleeving

SKEL

OCCUPYING AN INTERMEDIATE weight class between human and AMP Suit, the Skel was developed as a multipurpose capability amplifier for industrial and military applications. In a work setting a Skel can operate safely around unprotected human personnel due to its lightweight manufacture, excellent driver situational awareness, and automated collision-avoidance features. The moderate size of a Skel also means it can use airlocks and corridors built for humans, unlike the lumbering AMP Suit. On a war footing, a Skel makes a human as tall, strong, and fast as a Na'vi, and able to shoulder an arsenal of high-caliber assault weapons and even a devastating flamethrower. In the marine context aboard a SeaDragon a Skel can deftly wrangle cargo, chains, and other heavy equipment as part of vehicle maintenance or tulkun hunting operations.

Robotic exoskeleton does heavy work with minimal operator exertion



Camera sight

SKEL M69-AR
The Skel M69-AR is chambered in .50 caliber BAT to pack a much larger punch than equivalent human guns

SKEL WEAPONS

Given the complexity of delivering human combat personnel to Pandora, maximum fighting power must be afforded to every set of boots on the ground. The Skel AR (also called the Skel Bullpup) put the firepower of a classic Browning machine gun in the hands of every Skel trooper, arming them for success against Na'vi and the thick-skinned wild beasts of Pandora. Skels can also be equipped with a flamethrower for clearing vegetation—and also for burning homes in order to force indigenous peoples into PDA compliance.

Y70 Bullpup with camera sight and underslung grenade launcher

FACT FILE

- > Iron sights are tough to use in a Skel, so a camera targeting system is employed, linking sensors on the gun with the driver's mask HUD
- > While most Skel engagements are at firearm range, ambitious Skel fighters train in robotic martial arts techniques when they get the chance
- > Skilled Skel drivers can do almost anything with the machine's hands, from precise, technical work to holding a mug of hot coffee.

High-strength carbon fiber used extensively to reduce weight

Semi-prehensile feet can grasp terrain and roots for aggressive forest running

DATA FILE

MANUFACTURER Uti
MODEL EXO-32 Light Mobility Platform
AFFILIATION All RDA divisions
HEIGHT 9 ft 6 in (2.9 m)
MAX SPEED 20 mph (32 kph)
WEAPONS Skel AR and Bullpup, Flamethrower, Bullet Hose

Force feedback is channeled from foot sensors to the operator's shimmers

Shoulder servo

Flamethrower

Collapsible stock

As with the AMP, waldo arm control can be engaged and disengaged

Without its driver, a Skel looks truly skeletal

SKEL WITHOUT DRIVER

SKEL FLAMETHROWER

The FT-M3A1 series is the result of years of development. Based on the older Bushboss FD-3, the FT-M3A1 offers improvements on fuel capacity, range, and mobility. The flamethrower is connected by a hose to a tank system containing fuel and a propellant.

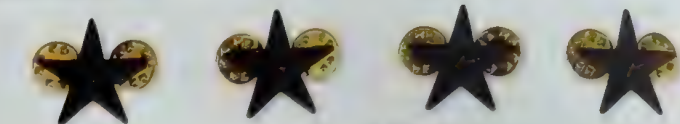
Internal structures are made of noncorroding stainless steel

MARINE SKEL

The "Sea Skel" is ready for duty on the SeaDragon or Bridghead's docks. Can a Skel swim? Skel sailors try hard not to find out

GENERAL FRANCES ARDMORE

GENERAL FRANCES ARDMORE is the RDA's new Expeditionary Force Commander. Operating as on-world commander and security leader, she is charged with the RDA/Sec-Ops' new top priority: retaking Pandora to make it humanity's new home. Ardmore is just the kind of officer that the RDA needs to handle this big-theater operation. She is a well-educated and practiced political strategist, with a demeanor that conveys intelligence and mental agility. She is not only highly capable in combat but also a masterful thinker and planner.



FOUR-STAR GENERAL



SEC-OPS



BRIDGEHEAD SEC-OPS

DECORATED COMMANDER

While Colonel Quaritch met with corporate interference, nothing stands in General Ardmore's way. She has waged and won many wars in her time.



RIGID HOLSTER

New gen camo inspired by Pandoran natural patterns

Standard-issue field cap with officer insignia

STEELY COMMAND

Ardmore's style is different from that of her predecessor, Colonel Miles Quaritch. Where Quaritch was obsessive and monomaniacal, Ardmore exudes detachment. She's unemotional and machine-like, and signals that she's in charge without being physically imposing. Her kind of command is quieter, and she's defined as much, if not more, by how those around her behave. Ardmore is a cold-blooded visionary and her mandate is simple: establish Bridgehead as the stronghold from which the RDA can take back the moon. In these desperate times, Ardmore is prepared to do whatever it takes.



Multifunctional tactical light—laser and rangefinder

DATA FILE

SUBJECT	General Frances Ardmore
SPECIES	Human
STATUS	RDA Expeditionary Force Commander
HEIGHT	5 ft 4 in (1.65 m)
AGE	53 years

Z-33 PISTOL

For its new mission, the RDA has adopted the .40 caliber United Ballistics Zarkov-33 as the standard sidearm for all Sec-Ops and Cet-Ops troopers.

Micro motors deliver big torque from a small volume

Telescoping limbs adapt to driver proportions

Dextrous hands can do delicate work

Boots strapped into responsive mechanical bindings

Telescoping in legs is also used for shock absorption

Actuated spine bends and twists with driver

Harness with integrated body motion sensors

Highly adaptable ankle and foot design gives a solid foundation on terrain



REAR VIEW

ARDMORE'S SKEL SUIT

STANDARD-ISSUE COFFEE MUG

DATA FILE

MANUFACTURER	UKii
MODEL	EXO-32 Light Mobility Platform
AFFILIATION	All RDA divisions
HEIGHT	9 ft 6 in (2.9 m)
MAX SPEED	20 mph (32 kph)
WEAPONS	Skel AR and Bullpup; flamethrower; Bullet Hose

FACT FILE

- > General Ardmore sometimes uses a Skel Suit for boxing workouts.
- > A brilliant tactician and negotiator, General Ardmore can instantly assess a situation, understand the logistics presented, analyze all possible outcomes, and build a winning (or least non-zero-sum) strategy for engagement.



CAPTAIN MICK SCORESBY

MICK SCORESBY IS A weather-beaten and tough-skinned aquatic big-game hunter. He arrived on Pandora with the first new wave of humans, which included General Ardmore. The RDA hired Scoresby and placed him in charge of a newly minted fleet of sea vessels, including large SeaDragon ships. His singular mission is to hunt and harvest as many *tulkun* as he can. Scoresby is thrilled to be back in the game because hunting ocean creatures is a long-expired practice back on Earth.

NEW RESOURCES

Now that the RDA has discovered *amrita*—the extractable value that lies within the *tulkun*—General Ardmore provides Scoresby with all the most sophisticated hunting vehicles, including spotter aircraft, Mako fast-attack subs, nimble Picador boats, Matador boats, and amphibious Crab Suit mini-subs.



Knife can be held in a sheath strapped to Scoresby's leg

Sharp blade for gutting fish—or punching a hole in the side of a beer can

SMALL WEAPONS

The RDA is throwing everything it can at the hunt for *tulkun*. As well as big boats and vessels, Scoresby uses smaller weapons, including knives, guns and mounts, harpoons, locator devices, and tags.

DATA FILE

SUBJECT Captain Mick Scoresby
SPECIES Human
AFFILIATION RDA

FACT FILE

- > Scoresby's main vessel, from which he controls the fleet and deploys assets, is his very own SeaDragon.
- > Quaritch quickly conscripts Scoresby, with his SeaDragon, for his side project of hunting down the Sully family.



AFTER THE HUNT

Scoresby can't think of a better way to celebrate a successful *tulkun* hunt than by drinking a few cans of beer with his crew.

Wading boots

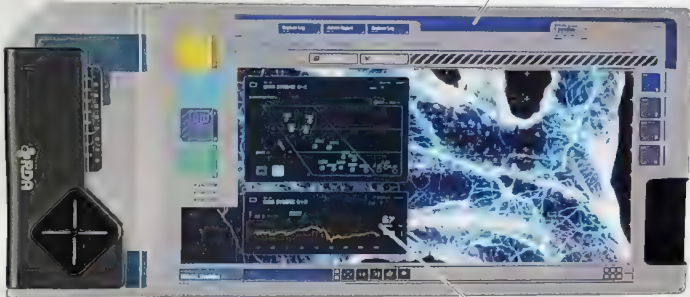
Standard work attire



DR. IAN GARVIN

CHAPTER 3: THE RDA

RDA MARINE BIOLOGIST Ian Garvin is regarded as the on-world scientific expert on Pandora's oceans, and the *tulkun* in particular. Though he would prefer to have nothing to do with *tulkun* hunting, the RDA uses the threat of shutting down his research to coerce the scientist into working with them. Upon his arrival on Pandora, Garvin led an existing oceanographic research team. This small team managed everything itself—and Garvin is well suited to the task. He knows his way around a lab, but he's a field researcher to the core, happily risking his life where others would dread to roam. A seasoned scuba diver, he regularly traverses the predator-infested Pandoran oceans taking samples, imaging specimens, and capturing data.



Touchscreen mobile workstation

STOLEN DATA

With the use of the knowledge stored on Garvin's datapad, including locator tags, the RDA can find and hunt down more *tulkun* than ever before.

Tablet can be used to extend a desktop workstation by docking into a stand

DATA FILE

SUBJECT Ian Garvin
SPECIES Human
STATUS Marine biologist
AFFILIATION RDA
HEIGHT 6 ft (1.85 m)

FACT FILE

- > Garvin discovered the powerful, natural compound known as *amrita* while dissecting the brains of the *tulkun*.
- > A passionate oceanographic explorer, Dr. Garvin studied and fell in love with Pandora's oceans and the rich and exotic life found within.

Scanner collects data from environment and transmits it to chip card

Field vest

Wristband contains chip-card processing information from scanner

FIELD RESEARCHER

Garvin originally conducted marine research in the same way that xenobotanist Dr. Grace Augustine once did in the jungle. He had a small, mobile, habitable, research lab vessel—a catamaran hull with a couple of trusses across it and two shacks built onto it. Garvin is able to set up a shack on a beach for a while. Then his mobile lab can dock with the landed setup and, if he needs it to interface with *olo'eyktan* (clan leader) Tonowari or the Reef People, his lab can drop anchor in their cove for easy access.

Dive watch

Dive knife



GENERAL TECH

FROM HIGH-TECH GADGETS to the latest small arms, RDA tech is used widely by RDA personnel and Jake Sully's resistance fighters, who are only too happy to steal equipment for their own purposes. Advanced methods of encrypted communication, as well as powerful, globally networked data interfaces, allow RDA users to operate in a common system of information and control across Pandora. A family of new-generation weapons with enhanced capabilities against hostile fauna and indigenous opponents keep personnel safe in the field. Another new and critical piece of equipment protects RDA people close to base—the IFF (Identification/Friend or Foe) badge (transponder), which transmits a signal that inhibits the automated gun and missile systems installed at RDA facilities. RDA crew know that if they forget their IFF, they may not live long enough to regret it.



BIO SCANNER
Built ruggedly and equipped with a multipurpose scan wand, the CR-4 is a powerful life-saving tool for remote operations. Max Patel keeps his in the High Camp Bivouac.

CR-4 DIAGNOSTIC SYS

DATA EVERYWHERE
Advanced datapads are critical for operating in the RDA's data-rich work environment. Coming in a variety of sizes, these devices use the same pseudotactile display tech found in RDA computer workstations.

Wireless handset for radio comms

PERSONAL MINIPAD

STANDARD GUN MINIPAD



RUGGED FIELD PAD

IFF TRANSPONDER

Sensor arch
bristles with radar
and antennae

6-30 STANDARD PISTOL

6-66A HEX COMBAT/UTILITY KNIFE

AM-6/75L "FIRE ARROW" GUIDED MUNITION


Munitions are
specialized for use
against different targets

1000-01 MINIPAD (HAND-PORTABLE
AIR-DEFENSE) MISSILE LAUNCHER

DON'T SHOOT
With all the automated weaponry defending RDA assets, it is critical for troops and vehicles to carry an IFF transponder.

NEW WEAPONS FOR A NEW WORLD
In the early days, most RDA weaponry was borrowed from service on Earth. But based on the brutal lessons of the Battle of the Hallelujah Mountains, RDA engineers have worked hard to field a new generation of Pandora-ready defenses.

SKY DEFENSE
Designed for an anti-aircraft role, this missile system has been adapted for Pandora use with targeting that can lock onto biological signatures. When captured by Jake's raiders, the launcher does quite well in its original role against aircraft.



CHAPTER 4: THE RECOM PROGRAM

Recoms (or Recombinants) are a new breed of transgenic human/Na'vi hybrid warriors created by the RDA. Classified as Project Phoenix, the Recom program was accelerated immediately after the RDA defeat in 2154 as part of a fully funded counteroffensive invasion force. Recoms are created and grown in an identical fashion to avatar bodies, but, unlike avatars, they do not need a human driver to operate them from a remote location. The memories of deceased RDA Sec-Ops soldiers are uploaded directly to the consciousness of Recombinants, so these new hybrid warriors are untethered from the need for a psionic link between human and hybrid body.

COLONEL QUARITCH

A RECOMBINANT WARRIOR standing 9 feet 5 in (2.9 meters) tall, Quaritch is biologically young—only slightly “older” than Jake’s avatar when he arrived on Pandora. He also has the mind of human Miles Quaritch, who was 51 when he died. This mix of physical youth and experience of mind is a deadly combination. Retaining his human rank of colonel, Quaritch has been fully briefed on his new existence. Now he prepares himself and his squad of 11 Recoms for their new mission: to hunt down and kill Jake Sully, the traitor to humanity and leader of the Na’vi insurgency responsible for the expulsion of the RDA from Pandora.

ADVANCED GENETICS

Quaritch awakens on board the interstellar warship ISV *Vindicator* after six years of transit in an amnio-tank, in which the daily use of proprioceptive neuromuscular simulators conditioned, matured, and strengthened his Recom body. His identity and memory were uploaded from an encoder device called a Soul Drive. As an autonomous being, a Recom like Quaritch is inherently more stable and self-sustaining than an avatar, representing a massive advancement in genetic engineering.



SOUL DRIVE
The subject’s memories are written into the structures of the Soul Drive’s crystal as thousands of layers of nanoscale etchings.

FACT FILE

- > Quaritch has a simple definition of what a commanding officer is supposed to do: win.
- > The Colonel believes that to win the fight, you must understand your enemy. In his new form as a Recom, he now feels one step closer to understanding the Na’vi.

“I KNOW YOU’RE ALL ASKING YOURSELVES THE SAME QUESTION, ‘WHY SO BLUE?’”



Years later, Quaritch is back in action in the Omatikaya rainforest.

TACTICAL ADVANTAGE

Unlike humans and machines, Recoms are not detected by Eywa as a threat due to their Na’vi DNA. This means that Recoms can walk freely through Pandora without triggering Eywa’s immune response of dispatching animals to defend the moon. Going undetected by Eywa gives Quaritch the tactical advantage he’s always wanted in the forest: using Na’vi-like stealth, he is able to establish his own hunting ground.

DATA FILE

SUBJECT	Colonel Miles Quaritch
SPECIES	Recom
AFFILIATION	Phoenix Project
HEIGHT	9 ft 5 in (2.9 m)
AGE	20 years



DRESSED FOR SUCCESS

Quaritch’s appearance is a reflection of the state of his mind: focused and disciplined. All the equipment he keeps on him fulfills a purpose toward the clearest path to victory.

CORPORAL WAINFLEET

CORPORAL LYLE WAINFLEET is Colonel Quaritch's trusted aide, entrusted to be the team leader of the Recom unit. Wainfleet earned his position as a result of his diverse combat skills and bullish devotion to his fellow troopers. He has always looked out for the person on his left and his right, ever since his days as a human AMP Suit driver and Samson gunner. Now a Recom warrior, Wainfleet is keen to return to the fight on Pandora, and, as he sees it, get some payback.

SEASONED SNIPER

Wainfleet specializes in sniping and is equipped with a long rifle that combines shooting accuracy with increased muzzle velocity. Although he could have opted for a shorter variant for better maneuverability in the jungle, Wainfleet would rather go through things than around them. He likes the increased power that the longer barrel has to offer.

GUNSLINGER

One firearm is never enough. Recoms are trained to handle and carry multiple weapons.

FACT FILE

- After some time on Pandora, Wainfleet and the other Recoms cut off the lower legs of their pants and ditch their tactical boots for bare feet in order to move faster and more quietly and to get deeper into the rainforest.
- Wainfleet has five tattoos, including a dragon on his left forearm.

"No Fear" skull tattoo

RECOM TRAINING

Formerly an assigned Jungle Escort to the avatars in the Avatar Program, Wainfleet has had exposure to the lives of the human/Na'vi hybrids. From the trials of maintaining good *kuru* hygiene to the struggles of getting around human-size facilities, this Recom has heard it all. What his former self would shrug off as "their problem" has become the intelligence and preparation he needs for life as a Recom.

RECOM BLADE

Wainfleet's machete is standard-issue for Recoms.

DATA FILE

SUBJECT	Corporal Lyle Wainfleet
SPECIES	Recom
AFFILIATION	Project Phoenix
HEIGHT	5' 11" (1.81 m)
AGE	20 years

Hydration tube

High-intensity chemlights

Sidearm magazine pouch

PERSONALIZED TATTOOS

The tattoos Recoms had as humans are issued to them in their new bodies to help ease the psychological transition.

RECOM GUN

Wainfleet's Z-33R Recom Pistol sits in a holster on his equipment belt.

RECOM EQUIPMENT

THE RECOMS ARE EQUIPPED to achieve their mission by any means necessary and to ensure the RDA's advancement and its military goal: to retake Pandora in order to provide a new home for humanity. The RDA believes that every living being on Pandora wants to repulse it, and the Recoms must be aware of that fact every second of every day. Their mission is facilitated by a range of tools and artillery that aids them in all scenarios.



Slogan promotes the "unstoppable force" of the Recom front line

RECOM TEAM BADGE



RECOM I.D. TAG



FRAG GRENADE



FRAG GRENADE



FRAG GRENADE



ALEXANDER

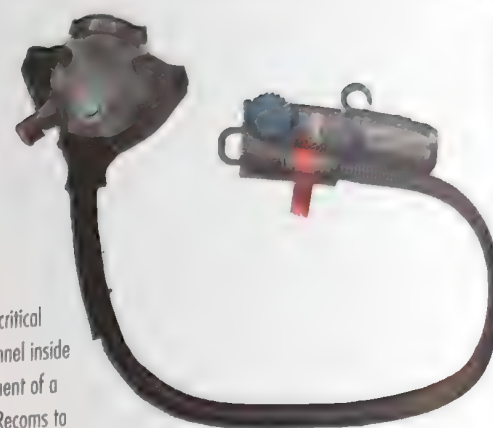
ZHANG

PRAGER

WALKER

MANSK

FIKE



AAS-R02 ATMOS ADAPTATION SYSTEM

RECOM BREATHER

Supplementary carbon dioxide is critical for the operation of Recom personnel inside human-air facilities. The development of a compact breather system allows Recoms to "sip" carbon dioxide every minute or two.



RECOM Z-33R PISTOL

Fires up to 40 rounds a minute

HIGH-POWERED PISTOL

The Recom Pistol, like all Recom weaponry, is built to maximize devastation. The hollow point rounds fragment upon impact, sending shards of the round in every direction. The impact alone is enough to knock most targets to the ground.



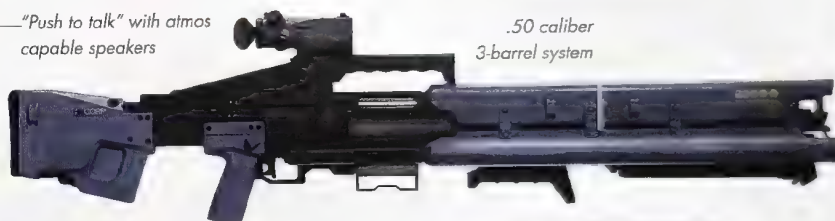
0226-LSAR (LINKABLE SKEL ASSAULT ROUND)



HYDRATION PACK



RECOM THROAT COMMS



RECOM HYDRA MACHINE GUN



RECOM M69-AR

Long barrel for high muzzle velocity



RECOM KNIFE



RECOM KNIFE IN SHEATH

.50 caliber 3-barrel system

SKEL-BASED WEAPONRY

Recom weapons are often modified versions of the artillery units for the human Skel Suit platform. They are adjusted for targeting orientation and for maneuverability of the Recom physiology.

RECOM UNIT

Regarded as the RDA's muscle, the Recom unit is a special forces operation that takes orders from the top and assists in any extraordinary circumstances. These well-trained soldiers toe the line and are respectful of the chain of command, following tactics that they are told will keep them alive beyond the perimeter. But it's going to take more than guns and manpower to subdue the Pandoran rainforest, and their survival may depend on how much they are able to adapt in the field.




ZDINARSK

WARREN

BROWN

LOPEZ



CHAPTER 5: RDA VEHICLES

The RDA wants to make Bridgehead a true territorial foothold, which makes the new city far more dangerous to Pandora and the Na'vi than the old mining operation at Hell's Gate. The RDA has called on its brightest minds to develop a new generation of faster and deadlier vehicles, adopting the latest tech from a war-torn Earth to the needs of an unwelcoming world. By sea, air, and land, these high-performance mobile machines build, patrol, and protect RDA installations across the moon, enabling RDA expansion into new territories and new forms of resource extraction. A primary new focus is CetOps (Cetacean Operations) and its aggressive, purpose-built hunting vessels.

S-76 SEADRAGON

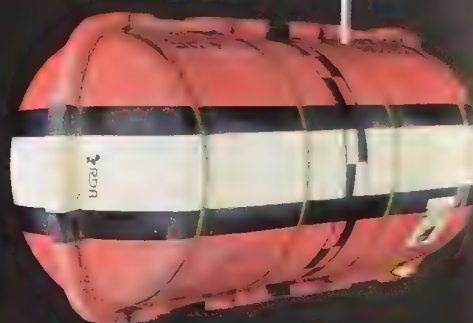
THE ALL-NEW RDA PANDORAN sea vessel S-76 SeaDragon is a large Wing-In-Ground-Effect (WIGE) ship designed for hunting Pandora's whale-like *tulkun*. This heavily equipped, high-speed platform has an impressive range of many thousands of miles. At low speed it operates as a surface ship, but can rise up on hydrofoils then lift fully out of the water to fly low over the waves in ground effect. With a top speed of 130 knots (150 mph/241 kph), the SeaDragon can keep pace with its helicopter escort over all but the very roughest seas.



Once a *tulkun* is within range, the SeaDragon must deploy its herding and hunting craft as rapidly as possible. Mako hunter subs are dropped into the water through a moon pool that opens in the hull.



In case of emergency, self-inflating rafts are deployed automatically or by crew.



EMERGENCY RAFT CARTRIDGE



VIAL OF AMNIO

HUNTING PLATFORM

The SeaDragon serves as a support ship to an array of smaller vessels, which deploy from its foredeck and aft ramp. On Pandora, SeaDragons are manufactured in a dazzling high-tech shipyard using locally mined materials. Huge hull and wing parts are made in molten metal by enormous 3D print gantries. Once fully assembled, the SeaDragon is launched into the sea, ready to hunt *tulkun*.



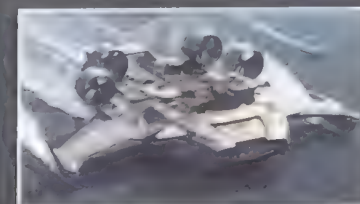
DATA FILE

MANUFACTURER General Dynamics
MODEL S-76 SeaDragon
AFFILIATION RDA Cat-Ops
LENGTH 397 ft (121 m)
MAX SPEED 130 knots (150 mph/241 kph)

FACT FILE

► Part sea-craft and part plane, the SeaDragon is totally unique but bears some family resemblance to the hulking Dragon aircraft from which it derives its name.

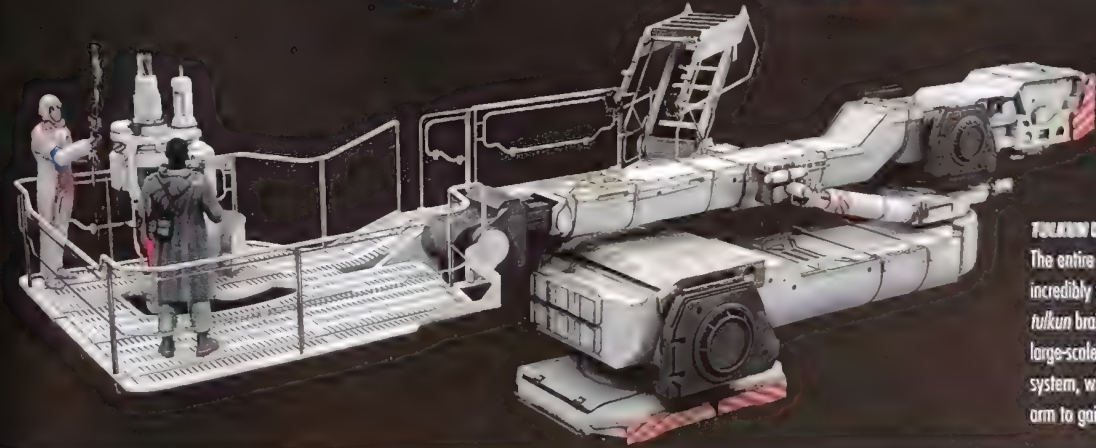
► The SeaDragon is purpose-designed as a mothership for *tulkun* hunting, deploying surface boats and hunter subs to track, harpoon, and harvest the great creatures.



Prop-rotors provide the thrust required to lift the craft up onto its hydrofoils.



Body of ship can be lifted up and out of the water at impressive speeds by hydrofoils on the underside.



TULKUN DRILL CRANE

The entire focus of Cat-Ops operations is harvesting the incredibly valuable material known as *amnio* from *tulkun* brains. To do this, Cat-Ops has engineered a large-scale, medical-grade drilling and extraction system, which rides atop a precise robotic crane arm to gain entry to the animal's mouth.

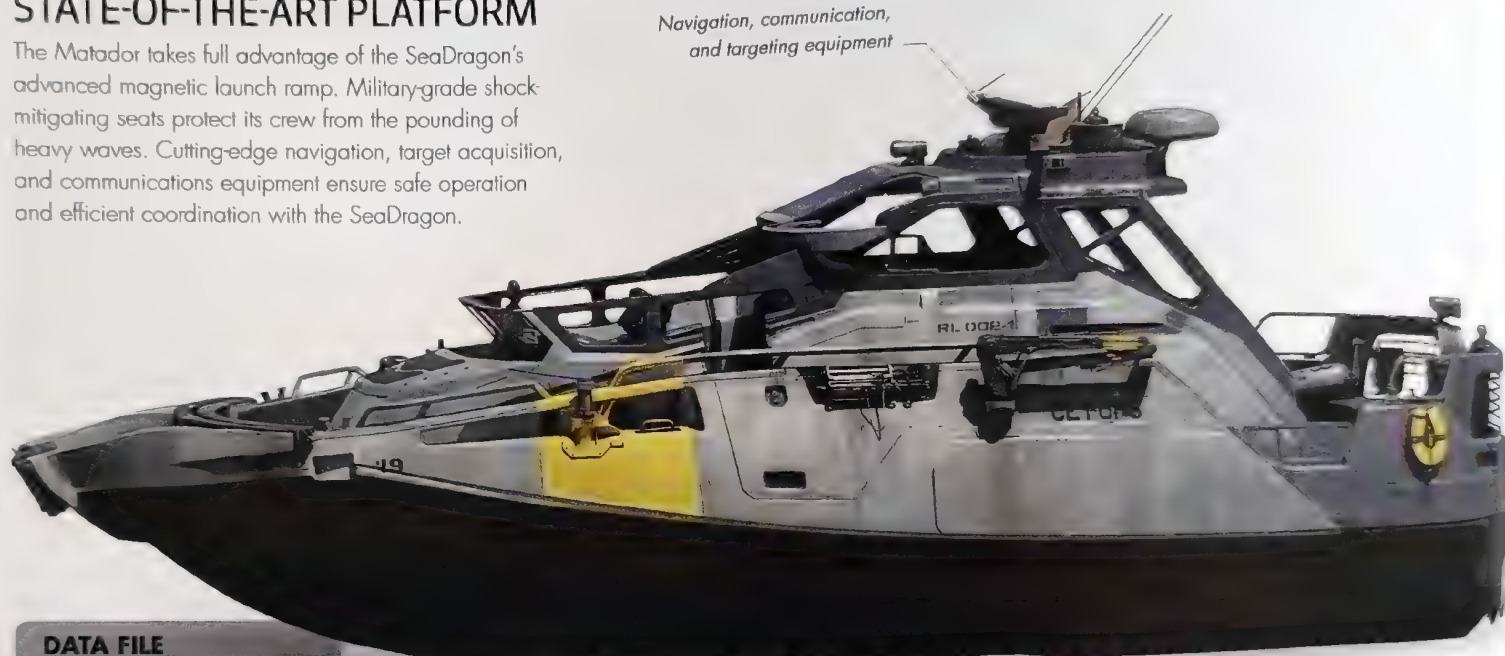
MATADOR

SPECIALLY DESIGNED as a high-speed forward command, support, and harpoon platform, the Matador operates as the quarterback of the Cet-Ops *tulkun* hunting squad. Equipped with a powerful engine, it is quick to deploy and even quicker to chase down its prey. Its 50-foot (15-meter) "deep V" hull and twin jet drives propel the crew of eight through big swells at more than 40 knots (46 mph/74 kph) while offering exceptional maneuverability.

STATE-OF-THE-ART PLATFORM

The Matador takes full advantage of the SeaDragon's advanced magnetic launch ramp. Military-grade shock-mitigating seats protect its crew from the pounding of heavy waves. Cutting-edge navigation, target acquisition, and communications equipment ensure safe operation and efficient coordination with the SeaDragon.

Navigation, communication,
and targeting equipment



PORT SIDE VIEW

DATA FILE

MANUFACTURER RDA

MODEL Matador

AFFILIATION RDA Cet-Ops

SIZE 50 ft (15.2 m)

MAX SPEED 45 knots (52 mph/83 kph)

FACT FILE

- > The Matador serves as the skipper's mobile command center, with advanced sonar and underwater imaging plotted on the front display.
- > A successfully lodged harpoon and tether can cause the Matador to be dragged along by the *tulkun* until the animal surrenders.



BOW VIEW



STERN VIEW



MATADOR COCKPIT



HYDRA MACHINE GUN



AMMO BELT

ONBOARD ARMORY

Onboard equipment includes a gyro-stabilized acoustic depth-charge launcher, measuring 3.5 in (90 mm), and three 50-caliber Hydra machine guns.

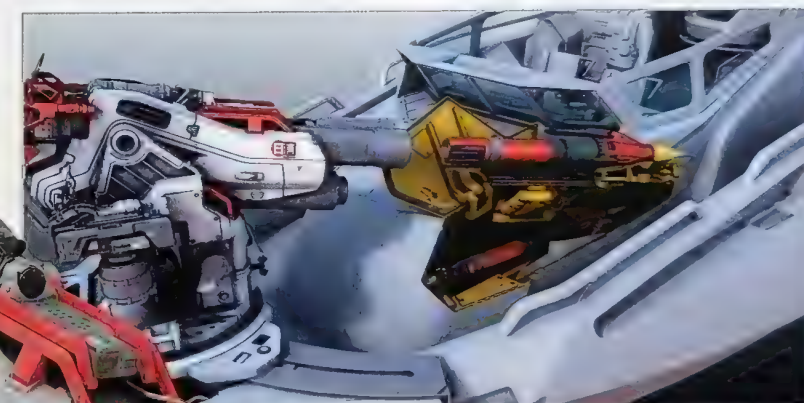
A harpoon launcher is mounted on a dedicated swivel at the bow. This big gun features a locking barb projectile, a high-tensile cable, and an integrated winch—all designed to never let the big one get away.



ROCKET PROJECTILE



HARPOON GUN



RELOADING SYSTEM

PICADOR

PICADORS ARE FAST AND AGILE surface boats used in distance patrol and defensive response roles. A variant is used for the most dangerous of missions: pirate hunting. Picadors' speed lets them get to the target almost instantly, and their maneuverability allows them to track and engage the quarry from any angle. Picadors show their quarry no mercy. They will not hesitate to use their heavy weapons to destroy the target.

Chunker grenade launcher

Sensor "basket handle" equipped with radar, cameras, and more

Windscreen HUD shows critical tactical and vehicle data



COCKPIT



BOW VIEW



STERN VIEW

DATA FILE

MANUFACTURER: *SecOps*

MODEL: *Picador 9500*

AFFILIATION: *SecOps*

LENGTH: *42 ft 6 in*

MAX SPEED: *40 knots (74 mph / 119 km/h)*

THE CHUNKER

A heavy-duty grenade launcher, the Chunker is a primary weapon for the Picador. It is a shoulder-mounted, air-fired, single-shot weapon that can be used in a variety of ways. It can be used to launch a single grenade, or it can be used to launch a full magazine of grenades. The Chunker is a versatile weapon that can be used in a variety of ways.

Smoke screen launchers for strategic attack or retreat

FACT FILE

> Its dual jet drive allows a Picador to turn within its own length and stop suddenly by dropping its thrust reversers.

> A rescue variant—orange and gray, unarmed but with powerful lights—is deployed onboard SeaDragons and other large RDA vessels.

SOUND CANNON

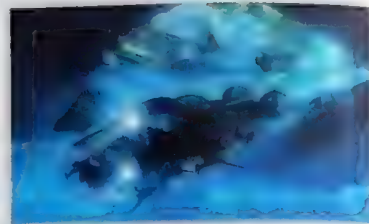
The Sound Cannon is a powerful weapon that can be used to destroy enemy vessels. It is a shoulder-mounted, air-fired, single-shot weapon that can be used in a variety of ways. It can be used to launch a single grenade, or it can be used to launch a full magazine of grenades. The Sound Cannon is a versatile weapon that can be used in a variety of ways.



MAKO SUBMERSIBLE

THE FAST AND DEADLY

The Mako submersible is a highly advanced underwater vehicle designed for deep-sea operations. It features a sleek, hydrodynamic hull and a powerful propulsion system that allows it to move quickly and silently beneath the surface. The submersible is equipped with a variety of weapons and sensors, making it a formidable force in underwater combat. Its ability to operate at great depths and for extended periods of time makes it a valuable asset for military and scientific missions.



THE MAKO SUBMERSIBLE IN ACTION



MAKO TEAM BADGE



DATA FILE

MANUFACTURER: US

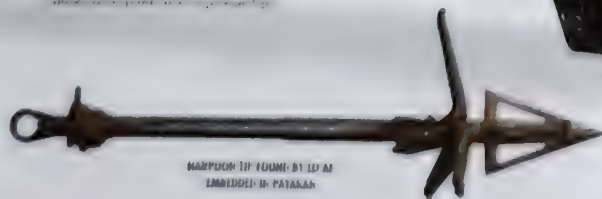
MODEL: 4

AFFILIATION: MCO

MAX SPEED: 10 knots (18 km/h)

UNDERWATER HUNTERS

The Mako submersible is a highly advanced underwater vehicle designed for deep-sea operations. It features a sleek, hydrodynamic hull and a powerful propulsion system that allows it to move quickly and silently beneath the surface. The submersible is equipped with a variety of weapons and sensors, making it a formidable force in underwater combat. Its ability to operate at great depths and for extended periods of time makes it a valuable asset for military and scientific missions.



HARPOON TIP FOUND BY US AT EMBROIDER: H. PATAKAN



ROTARY SPEARHEAD PROJECTILE



FRONT VIEW

SIDE VIEW



MAKO SUBMERSIBLE

MAKO SUBMERSIBLE
DESIGNED BY
MCO

FACT FILE

- The Mako submersible is a highly advanced underwater vehicle designed for deep-sea operations.
- It features a sleek, hydrodynamic hull and a powerful propulsion system that allows it to move quickly and silently beneath the surface.
- The submersible is equipped with a variety of weapons and sensors, making it a formidable force in underwater combat.
- Its ability to operate at great depths and for extended periods of time makes it a valuable asset for military and scientific missions.



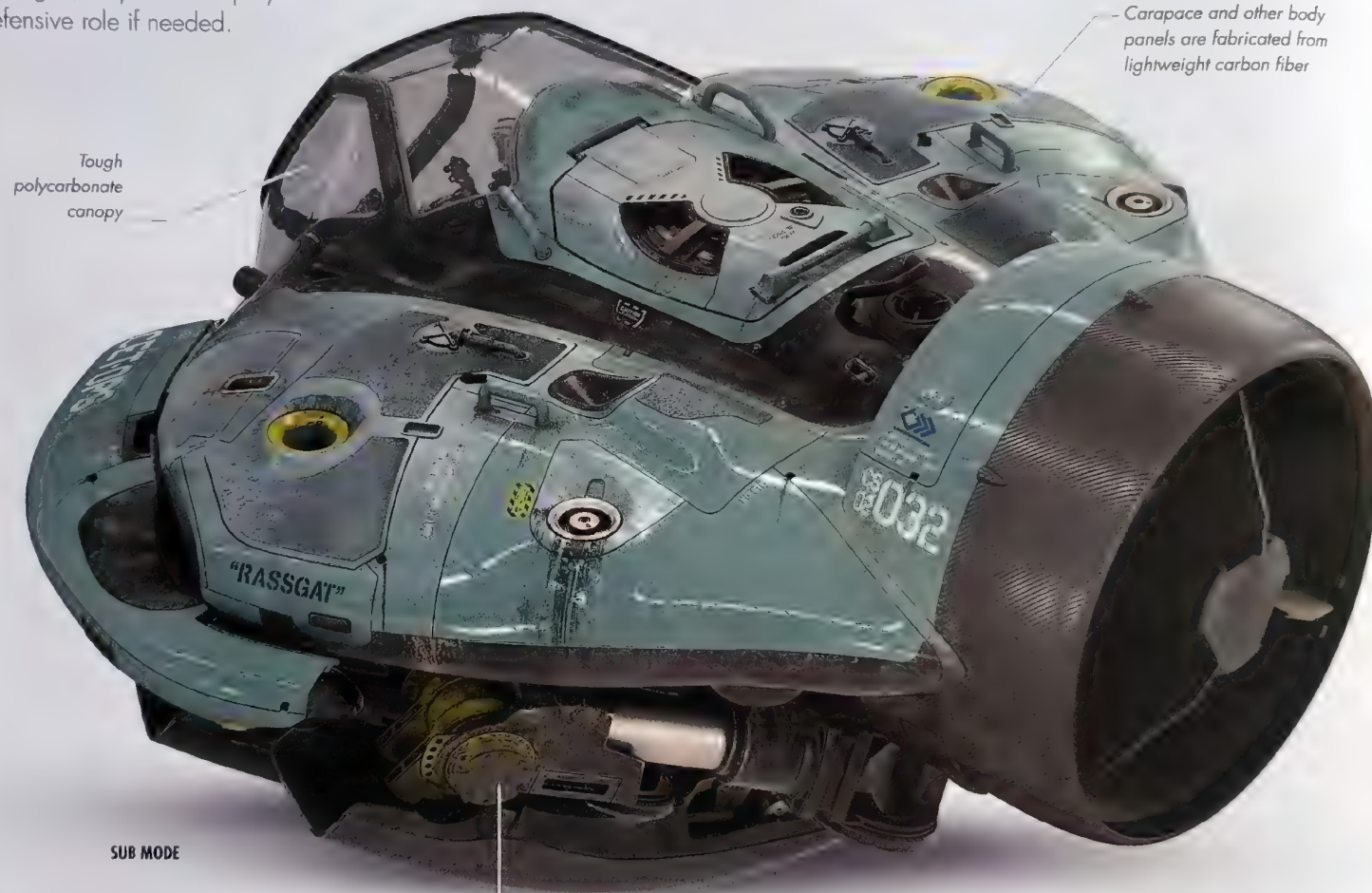
ROTARY SPEARHEAD PROJECTILE

CRAB SUIT

CRAB SUITS OPERATE AS underwater AMPs (Amplified Mobility Platforms). The main body is a sealed pilot cabin—rated to a depth of 1,640 feet (500 meters)—from which powerful arms and legs can unfurl. At Bridgehead, Crab Suits conduct underwater construction and security. Working under Cet-Ops, they deploy from a SeaDragon mothership to assist in the recovery of dead *tulkun* taken by the swift hunting boats and sub. Driving anchors into the creatures' armored backs and wrangling heavy towing lines, Crabs are the manual muscle of the hunting team. Armed with a rotary speargun, they can also play a defensive role if needed.



Slightly ungainly on land, the Crab Suit really comes into its own underwater.



Tough polycarbonate canopy

Carapace and other body panels are fabricated from lightweight carbon fiber

SUB MODE

FACT FILE

- > The grip force of the Crab Suit's manipulators is three-quarters the bite force of a great white shark on Earth.
- > Sub Mode operates underwater, but Crab Mode can operate both above and underwater.

Folded limb

AMPHIBIOUS CRAFT

On its return to Pandora, the RDA needed a way to project force—and do heavy work—beneath the waves. A water-adapted variant of the workhorse AMP Suit was considered, but it could not match project performance targets. The decision was made to pursue a completely new design using the strategy of biomimicry (the imitation of natural forms and functions) to achieve most of an AMP's capability but with vastly better speed, agility, and range underwater. Thus the Submersible Mobility Platform was born.

CONTROL COCKPIT

The Crab Suit cockpit is small but packed with functionality. Like the AMP Suit, the Crab uses a force-feedback armature for arm control, but places it in front of the pilot rather than behind. Foot and knee pedals control leg locomotion, while hand controllers double as joysticks for submarine flight.



All limbs fold tightly into body when vehicle is in sub mode



Dexterous manipulators can reconfigure for different tasks

CRAB MODE

Adaptable two-toed feet walk on knuckles over hard surfaces, but can grasp kelp and other organic materials underwater



ROTARY SPEARGUN



MAIN THRUSTER



INSPIRED BY NATURE

The suit's crab-like stance and appearance are no accident. Its engineers looked to nature for inspiration as they developed the vehicle's hydrodynamic shapes and modes of locomotion.

Main thruster is a powerful, electrically driven ducted propeller

Rugged cowl protects propeller from environmental hazards and boosts thrust efficiency

DATA FILE

MANUFACTURER	Kamath Intermodal
MODEL	SMP-2
AFFILIATION	RDA CET
MAX SPEED	19 knots (22 mph/35 kph)
CREW	1 pilot
WEAPONS	Rotary speargun (self-propelled munitions)

Steps deploy from front legs to form a ladder, by which pilots and crew mount the Crab Suit

SEAWASP

THE SEAWASP IS A NEW-GEN, high performance aerial gunship designed for a number of missions, including long-range patrol and reconnaissance for the hunting fleet as well as Sec-Ops (Special Operations, Air Force Air Support). While showing its lineage from the V-22 Osprey in its weaponry and cockpit layout, the new-gen Seawasp is a major evolutionary development with significant improvements in speed, range, and maneuverability. As with the V-22, the Seawasp's high-altitude seaward thrust is provided by two engines and four rotors, which allow the aircraft to operate in a variety of environments. Quick design allows for the constant grind of refueling and maintenance in sea: the Seawasp is a force to be reckoned with for Lake Sully and the North Sea.

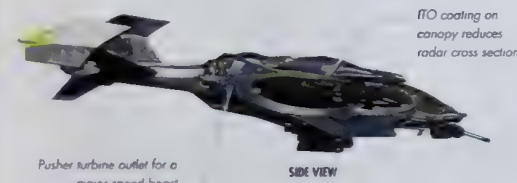


MISSION-READY

The ground team refuels and rearms a Seawasp gunship before takeoff



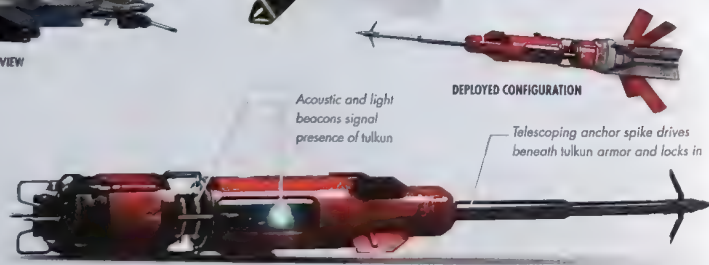
Wingtip pods for new guided missile system



FTO coating on canopy reduces radar cross section

TULKUN PINGER

One of the many roles of the Seawasp is as a spotter aircraft, helping its SeaDragon mothership to find tulkun pods. The spotter craft carries transmitter devices known as Pingers, which pilots can launch at specific tulkun targets, lodging the Pingers in the animals' back armor and marking them for interception by the SeaDragon and its hunting pack of water vehicles.



SIDE VIEW

Acoustic and light beacons signal presence of tulkun

DEPLOYED CONFIGURATION

Telescoping anchor spike drives beneath tulkun armor and locks in

FACT FILE

The Seawasp's skin is marked with a fine honeycomb pattern, which greatly reduces radar and adds strength to the light composite material.

The Seawasp's cockpit features large, wraparound displays banking a multi-mode, holographic head-up display.

Cockpit view for crew, mounted by mechanics

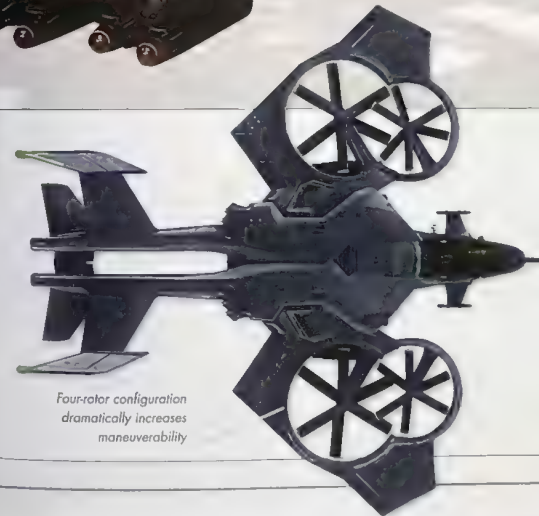
DATA FILE

MANUFACTURER	EDM Aerospace
MODEL	11-11
AFFILIATION	USA Sec Ops
LENGTH	45 ft 4 in (14 m) without chin gun
MAX SPEED	224 knots (327 mph / 524 kph)



Hellfire guided missile (from array of 16)

Winglets with control surfaces, for athletic maneuvering



Four-rotor configuration dramatically increases maneuverability

BUILT FOR SPEED

The Seawasp is the fastest rotorcraft ever fielded on Pandora, and in some respects is half airplane. Engineers gave it a sleek shape, similar to a jet fighter, and a powerful pair of pusher turbine engines that give maximum forward propulsion without heavy pitch of the rotors. Winglet extensions to the rotor cowls provide added lift and control surfaces, increasing range and providing high-speed aerobatic maneuverability usually seen on fixed-wing aircraft. The rotor system is also impressive. Sporting an innovative dual-rotor layout on each wing, the "quad rotor" configuration allows pilots to aggressively pitch and turn the craft at lower speeds, making the Seawasp a very nimble machine.

KESTREL GUNSHIP

A NEW-GENERATION ducted-rotor gunship, the Kestrel is a fighting and general transport craft in a heavier weight class than the RDA's older general-utility aircraft, SA-2 Samson. It is faster, far more heavily armed, and, with a larger cargo bay and loading ramp, and has a new level of troop and materiel deployment capability. Active magnetic cancellation and hardened electronics allow full operability in Pandora's flux cons (concentrations of intense magnetic fields). Pilot situational awareness is improved with a bubble canopy and a host of new sensors. A veritable arsenal of integrated weaponry is accompanied by two door-gun positions and a rear ramp gunner, making the Kestrel very difficult to surprise or destroy.



Kestrel gunships fly in formation over the Pandoran landscape.

Rotor system similar to that of the SA-2 Samson, but larger and lighter, for increased output and efficiency.

Magnetic cancellation units are arrayed across the aircraft.



BIGGER AND BADDER

At nearly 67 feet (20.4 m) long, the Kestrel is considerably larger than its predecessor and operates in a class of its own. Instead of skids, the Kestrel sports a rugged retractable landing gear that softens touchdowns under heavy loads of cargo or armed personnel. An armored personnel carrier of the skies, the craft can close its doors and ramp for long-range speed, then open them to unleash hell from three Hydra-B gun positions.

Glare-reducing coating gives the canopy a "bug-eyed" look.

Newly engineered rocket pods deliver destruction at record speed.

FRONT VIEW

Tail configuration inspired by AT-99 Scorpion Gunship improves maneuverability of the heavy Kestrel.

Exhaust reduces IR heat signature to help evade insurgent missiles and the eyes of Pandoran beasts.

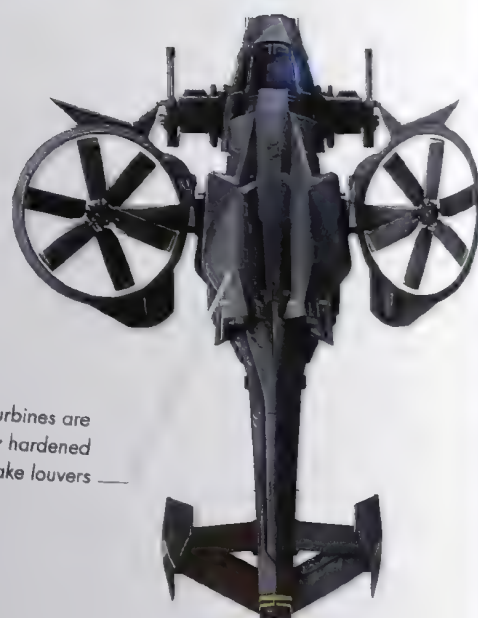


SIDE VIEW

Low-slung weapons pylons and generous door and ramp access facilitate easy rearming.

Fuselage patterns created by 3D print manufacturing.

Huge twin turbines are protected by hardened intake louvers.



TOP VIEW

DATA FILE

MANUFACTURER	Aerospace
MODEL	SA-9
AFFILIATION	RDA Sec-Ops
SIZE	66 ft 7 in (20.3 m)
MAX SPEED	235 knots (270 mph/435 kph)

DEATH FROM ABOVE

As the RDA reopens business on Pandora, it is taking no chances against the moon's indigenous warriors and deadly creatures. The armament of the SA-9 Kestrel reflects this commitment to aggressive operation even in the face of fierce danger. Boasting no fewer than five independently operable, high-caliber machine guns as well as the venerable Hellfire missile system and new volley-firing rocket pods, the Kestrel is ready to take on almost anything the inhabitants of Pandora can throw at it. It's no wonder the best Sec-Ops pilots and gunners jump at the opportunity to join a Kestrel crew.



FLIGHT CONTROLS



PILOTS' SEATS

Each ammo feed runs through the weapons boom to a 1,250-round magazine inside fuselage.

Weapons pylon, also called a stub wing.

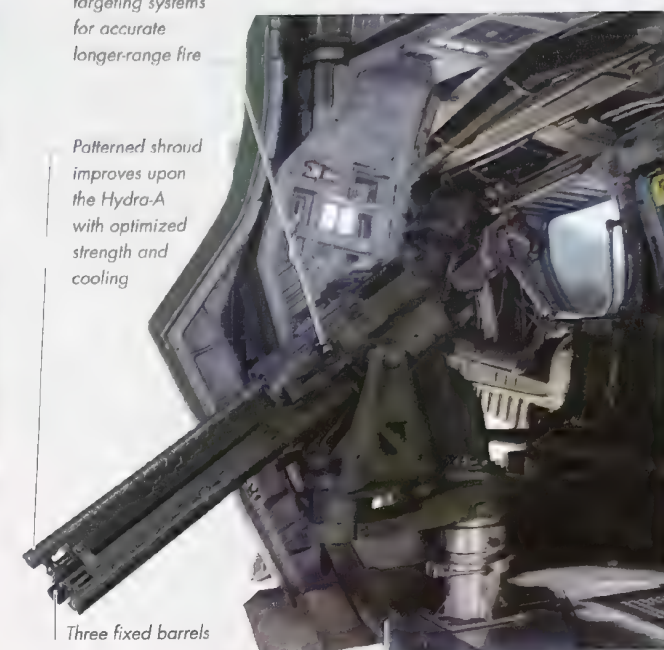


GAU 33-K STUB WING GUN

The H&F GAU 33-K is a 30 mm Gatling Autocannon capable of firing 1,750 rounds per minute.

Camera-based targeting systems for accurate longer-range fire.

Patterned shroud improves upon the Hydra-A with optimized strength and cooling.



HM CORP MBS-23B "HYDRA B" PINTLE-MOUNT HEAVY MACHINE GUN

Pintle can be repositioned to any point on motorized deck track.

Innovative muzzle cooling system.

Can be fitted with HE explosives as well as incendiary warheads for defoliating the jungle.



KM-722 DUAL CHIN GUN

Made by Griffin Defense Systems, the KM-722 is a 20 mm Autocannon (x2), with a firing capability of 750-1,000 rounds per minute (x2).

Shrouded twin barrels.

HELLFIRE GUIDED MISSILE

Manufactured by HMCORP, the AG-MFM 355 "Hellfire" is a self-guided air-to-air and air-to-ground missile. It features real-time fuse control and redundant "fire and forget" targeting systems.

FACT FILE

- > The Kestrel's large personnel and cargo bay makes it ideal for the military avatars known as Recams.
- > Special forces can drop into the jungle rapidly from a Kestrel using fast-rope booms on both sides of the aircraft.

ATOLLS

THE ATOLL IN WHICH

THE ATOLL IN WHICH

DATA FILE

REGION Corolla

TERRAIN Լիճերը տեղում ունենում են լճերի շղթա:

POPULATION

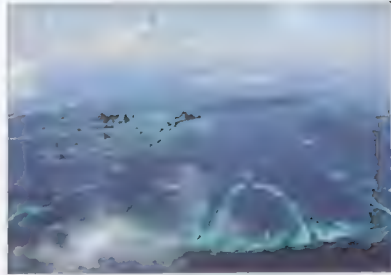
OCEAN VISITORS

upward water flows at
of 10 cm and fishes from
the water that the
Mullus barbatus
associated with the spot was

FACT FILE

$$M^{\pm} = \frac{1}{2}(M_1 \pm M_2) \quad \text{and} \quad M^{\pm} = \frac{1}{2}(M_1 \pm M_2) \quad \text{and} \quad M^{\pm} = \frac{1}{2}(M_1 \pm M_2) \quad \text{and} \quad M^{\pm} = \frac{1}{2}(M_1 \pm M_2)$$
$$\begin{aligned} \alpha(t) &= \ln \left(2 \frac{1 + t}{1 - t} \right) = \ln(1 + t) - \ln(1 - t) \\ &= \sum_{k=1}^{\infty} \frac{(-1)^{k+1} t^k}{k} - \sum_{k=1}^{\infty} \frac{(-1)^k t^k}{k} = \sum_{k=1}^{\infty} \frac{2t^k}{k} = 2 \ln(1 + t) \end{aligned}$$

The following lemma is a consequence of the above theorem.



DISTANT LOCATION

[illegible]

REEF NA'VI BELIEF

The Reef Na vi believe the sawall was created by Eywa to enclose the lagoon and promote life.

METKAYINA VILLAGE

METKAYINA DWELLINGS, known as *marui*, hang between the roots of enormous mangrove trees. They are constructed with a firm, woven flax similar to rattan. All Metkayina structures are designed to be strong enough to withstand Pandoran storms but light enough to not be injurious to the tree's roots. Some of these villages have existed for thousands of years. Structures are constantly renewed but seldom replaced. Almost all resources that the Metkayina use for constructing and repairing their *marui*—as well as all the tools they use—are taken from the reef and surrounding ocean, and the island forest. Metkayina clan members are careful only to take from the water exactly what is needed so they do not deplete the ocean of life.



COMMUNAL MEALS

The entire Metkayina clan share their evening meal, with everyone in the community coming together to contribute food and stories. They believe in building a strong and trusted community. The Metkayina have perfected every style of cooked fish, from grilled to smoked, utilizing herbs and spices that are picked on the island or traded with other clans. Meals are served on large Pandoran shells and gourds that have been halved and decorated. Each Metkayina has their own handmade plate. Typically made from wood or tree bark, the plates are fashioned to be held in one hand, leaving the other hand free to eat and serve.

WOVEN HAMMOCKS

The Metkayina sleep in woven hammocks, which are generally uncovered and remain exposed to the elements. Using their expert weaving abilities, the clan has created a soft yet warm loose weave that is comfortable all year round. The Metkayina also take inspiration from watery reflections. When possible, woven textures are crafted to have a wavy, organic quality as if they are being viewed through a rippling ocean surface.

FACT FILE

► There are many villages of the Metkayina clan. The one that Jake Sully and Neytiri live in is called *Weytiri*.

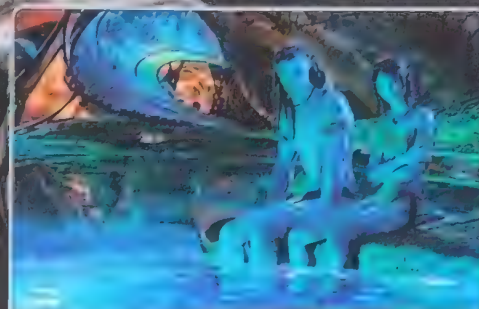
Mangrove root system used for hanging and supporting entire Metkayina village

Wallows

Twisted palm supports wallows

ELIY HANLEY (MAY)

CHAPTER 6: THE METKAYINA CLAN



INSPIRED BY THE OCEANS

The Metkayina have a special and personal relationship with the Pandoran oceans. Clan members honor their marine environment in nearly all their constructions. Inspired by pebbles in the ocean that are worn over millennia, they create many smooth and spherical surfaces, which are strong and deflect water and wind.

Open frame shape for guests to feel welcome in spare *marui*

Stripped and woven Pandoran flax and cotton

Transparent membrane allows in light and provides color

Right hoop used for sleeping and hanging *marui*

Bamboo fish pen

TONOWARI

PROUD, POWERFUL, AND RESPECTED by his people, Tonowari is the *olo'eyktan* of the Metkayina clan. He performs the same role as Jake Sully does for the Omatikaya clan, overseeing the secular well-being of his community. Tonowari exudes a fierce demeanor, and his clan respects him for his ideals and his ability to lead them through times of great challenge. Supported by his wife, *Tsahik Ronal*, he makes the difficult decision to provide *uturu* (sanctuary) to the Sully family, wrestling with the repercussions of what that choice ultimately means for his family and the Metkayina.

METKAYINA TATTOOS

Metkayina have striking tattoos, which are unique to each individual and chronicle their life. Each tattoo's location on the body carries a special meaning. Tattoos over the heart and chest symbolize the safe embrace of the central island. Arm tattoos represent the more exposed protective shield of the seawall. Thus, a hunter of the deep ocean has densely tattooed arms and less detail on their chest. The tattoos are considered a gift from both *Eywa* and the clan, and are created with inks from special animals. Tonowari, as *olo'eyktan*, has some of the most detailed and intricate tattoos of all the male Metkayina clan members. They range all over his face, torso, arms, and back.



ARMBAND

DATA FILE

SUBJECT Tonowari

SPECIES Na'vi

AFFILIATION Metkayina

HEIGHT 9 ft 7 in (2.92 m)



Tightly braided hair for good vision above and below water

Symbolic tattoos showcasing life events

Akula-tooth mantle

Knife worn at hip for ease in unsheathing for battle or hunting



Tonowari is a brave leader, who joins his clan on the front lines in battle.



METKAYINA BLADES

The knives of the Metkayina are made from super-hard obsidian sea stone. The crystalline weapons are hard enough to cut through the thickest fronds of seagrass, and sharp and delicate enough to peel the thinnest layer of skin from a fish.

Serrated tooth pattern modeled after akula teeth



Inset weaving from flax found in the reef's mangrove forest

CEREMONIAL CAPE

During certain ceremonial dances and rites—like a coming-of-age ceremony—Tonowari will wear this cape. It is made from netting, *ikran*-wing leather, and polished shell.



Macrame

Fish scales



SONGCORD

A small shell totem that Ronal could sing volumes about

Highly colorful braided knots and rope

IKNIMAYA

Much like Omatikaya teenagers, adolescent Metkayina must complete a number of coming-of-age rituals, known as *iknimaya*, before they are considered to be adult members of the clan. One of these ceremonies includes bonding with a *tsurak* (skimwing) and various tests with their *tulkun* spirit brother or sister. Once a Metkayina has completed these tests, they are bestowed with a special garment (left), their first tattoo, and three beads for their songcord.

Heavy leather waistband with leather fringe



TONOWARI

FACT FILE

- > Over many years, the Metkayina have crafted weapons and riding saddles designed for their oceanic environment.
- > *Uturu* is a cultural code among the Na'vi. Safe haven must be offered to weary travelers who invoke it.

RONAL

RONAL IS THE FIERCE and independent *tsahik* (shaman) of the Metkayina clan. She is responsible for the spiritual needs of the entire clan, but is also an accomplished hunter and warrior and is willing to put everything on the line to protect her people. Ronal is married to Tonowari, and they have two children—Tsireya and Ao'nung—with another on the way. When Jake Sully and Neytiri come to the distant atolls to seek *uturu* (sanctuary), Ronal initially rebuffs them, unwilling to accept the reality of the coming war with the RDA and looking down upon the Sully family—rainforest people—can earn their keep and find a way to live among the Metkayina.



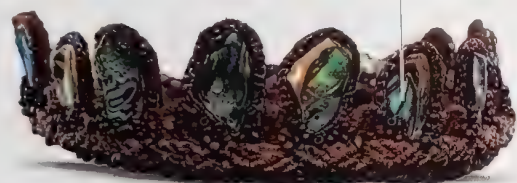
Ronal leads the rest of her clan, including Tonowari, in an important ceremony.



Marine Dorado Verde leather headpiece

Tattoos denote family and rank

Fine weave with iridescent shells



BATTLE ARMBAND

TEACHER AND LEADER

As Jake and Tonowari work together and the Sully children try to learn the ways of the Metkayina, Ronal spends her time with Neytiri instructing the Omatikaya *tsakarem* (*tsahik* in training) in how to live harmoniously with the ocean.

DATA FILE

SUBJECT Ronal
SPECIES Na'vi
AFFILIATION Metkayina
HEIGHT 8 ft 7 in (2.62 m)

CEREMONIAL DUTIES

As *tsahik*, Ronal leads all ceremonies for the Metkayina clan. One of the more beautiful and empowering experiences is the First Breath ceremony where the whole clan is present for the "water birth" of a Na'vi baby under shallow water. Ronal assists the mother in guiding her newborn as it kicks to the surface to take its first breath, a symbolic transition from water to air. The Metkayina also share this ceremony with the *tulkun*. A *tulkun* mother will give birth to a calf at the same time, who will join the Na'vi baby in being welcomed by the community.

MEDICINE POUCH

A leather roll containing herbs, puncturing quills, and medicine vials is used for healing.

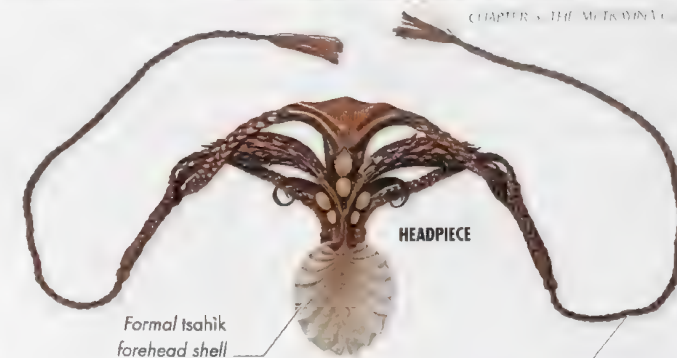


FACT FILE

> Even though she is *tsahik*, Ronal participates in all facets of clan life including hunting, gathering, and cooking.



SWIMMING GARMENTS



HEADPIECE

Formal *tsahik* forehead shell

Woven leather

Cascade of mother of pearl

Trinkets passed down between *tsahiks* over generations

A TSAHIK'S NECKLACE

Ronal wears a particular kind of necklace that holds a small, needlelike knife. She uses this knife for various ceremonial purposes. This neckpiece is strung with delicate beads and hangs behind her ears, attached to her headpiece.



Shell protects *tsahik* knife

TSAHIK'S SHELL

Songcord integrated into her dress, symbolizing her connection to all her people



RONAL'S KNIFE AND SHEATH

Aquamarine sea crystal blade

Shell celebrates birth of Tsireya

METKAYINA SKIRT

This garment denotes her rank as *tsahik*. It is made from hand-dyed seagrass fronds, seashells, and reef-flower petals.

SONGCORD

TSIREYA

TSIREYA IS THE DAUGHTER of Olo'eyktan Tonowari and Tsa'ik Ronal. She carries herself proudly and is tasked by her mother and father to be one of the Sully family's guides, helping the rainforest Na'vi navigate the ways of the reef people. She is kind and patient, and immediately takes on a caring attitude toward the unsettled Tuktirey. Tsireya is a calm and inviting presence among the other more unwelcoming Metkayina clan members.

Mottled Metkayina skin patterns, different from Omatikaya Na'vi striping

TSIREYA'S SONGCORD

There are several key life experiences and milestones woven into Tsireya's songcord, but many of the beads and trinkets she has included signify her appreciation of the people around her.

A shell in the shape of a water drum from a First Breath ceremony

SMALL DROPLET HEADPIECE

Woven seagrass

ARM BAND

Inset shell

Woven handgrip

Reef macrame top

OCEAN TEACHER

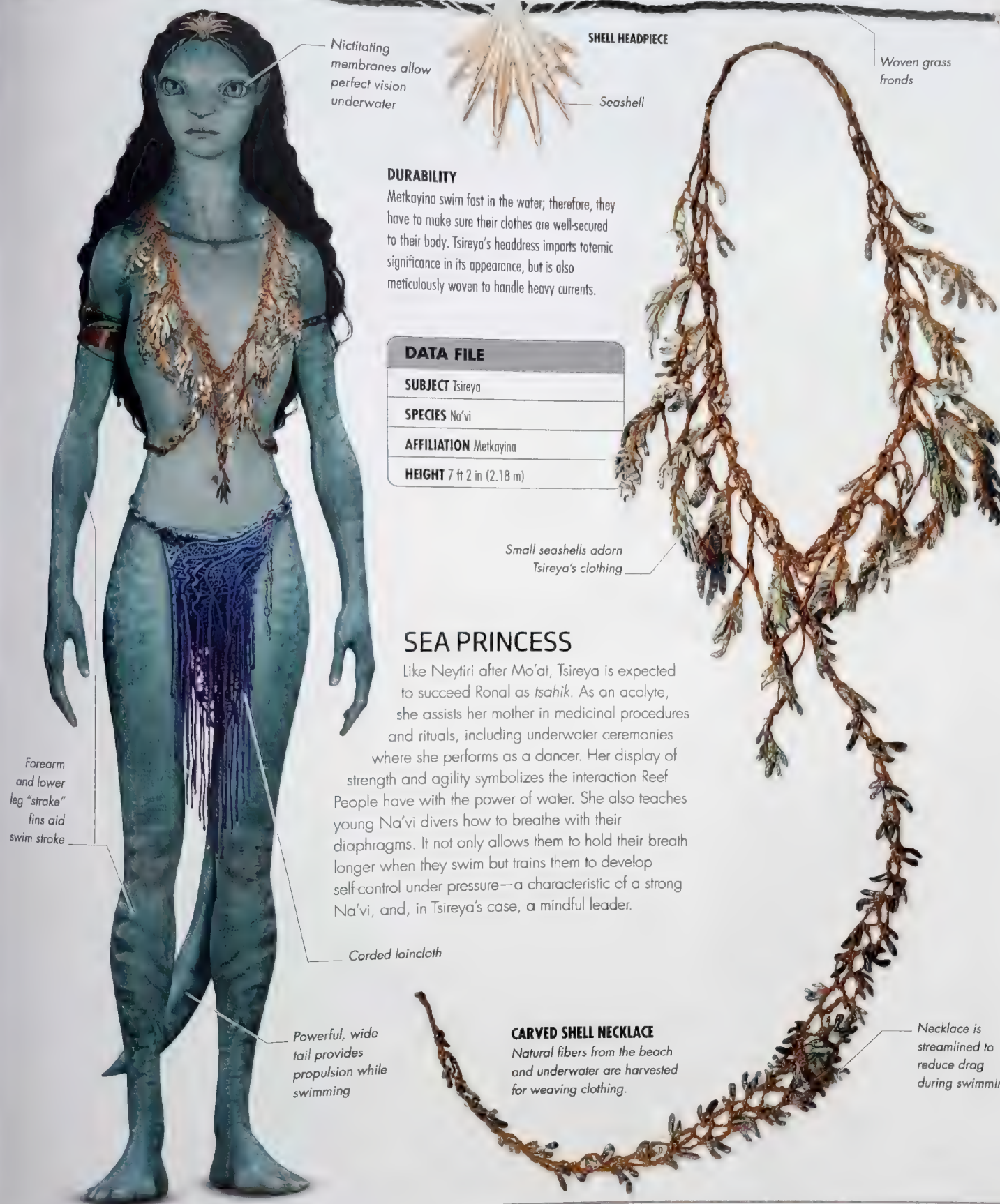
After the Sully family are settled in their new Metkayina *marui* dwelling, Tsireya and some other young Metkayina invite the Sully kids into the water to explore the reef for the first time. With no diving experience, the rainforest children cannot swim deep and stay underwater, frustrating some of their hosts. But Tsireya understands that the Sullys need training and time to adapt. She helps the Sully children improve their breath-holding, diving, and swimming skills, and aids them in learning the Metkayina sign language.

Sea glass blade

PROVIDER

Tsireya takes great care of her knife. She regularly hunts with it and provides food for others. The better condition it's in, the healthier her clan.

KNIFE



Nictitating membranes allow perfect vision underwater

SHELL HEADPIECE

Seashell

Woven grass fronds

DURABILITY

Metkayina swim fast in the water; therefore, they have to make sure their clothes are well-secured to their body. Tsireya's headdress imports totemic significance in its appearance, but is also meticulously woven to handle heavy currents.

DATA FILE

SUBJECT Tsireya

SPECIES Na'vi

AFFILIATION Metkayina

HEIGHT 7 ft 2 in (2.18 m)

Small seashells adorn Tsireya's clothing

SEA PRINCESS

Like Neytiri after Mo'at, Tsireya is expected to succeed Ronal as *tsahik*. As an acolyte, she assists her mother in medicinal procedures and rituals, including underwater ceremonies where she performs as a dancer. Her display of strength and agility symbolizes the interaction Reef People have with the power of water. She also teaches young Na'vi divers how to breathe with their diaphragms. It not only allows them to hold their breath longer when they swim but trains them to develop self-control under pressure—a characteristic of a strong Na'vi, and, in Tsireya's case, a mindful leader.

Corded loincloth

Powerful, wide tail provides propulsion while swimming

CARVED SHELL NECKLACE

Natural fibers from the beach and underwater are harvested for weaving clothing.

Necklace is streamlined to reduce drag during swimming

AO'NUNG

AO'NUNG IS A CONFIDENT METKAYINA diver on the cusp of becoming an adult in the clan. The son of Ronal and Tonowari, Ao'nung is a skilled hunter who is looked up to by the other adolescent males. When the Sully family make their sudden and unexpected arrival at the reef, Ao'nung and his cohorts are initially surprised by the forest people's call for safe harbor. The surprise turns to anger and resentment when his parents instruct him to help the Sully children assimilate into the reef lifestyle.



Alongside his sister, Ao'nung takes the Sully kids to see the Cove of the Ancestors, a sacred place for the Metkayina clan.

DATA FILE	
SUBJECT	Ao'nung
SPECIES	Na'vi
AFFILIATION	Metkayina
HEIGHT	8 ft 5 in (2.57 m)
AGE	15 years

Too young for ceremonial tattoos

Physiological arm "stroke" for faster swimming speed

RELUCTANT GUIDE

Unlike his patient and understanding sister Tsireya, Ao'nung views the task of assisting the Sullys with great displeasure. He sees the Sully children as a burdensome drain on his time. When his sister is not watching, Ao'nung bullies the young Sullys, especially Kiri, which leads to a confrontation between her brothers and the reef boys. However, as the threat of the RDA looms larger, Ao'nung finds friendship with the Sully children, and they band together as one to try to repel the invaders of his home.

WARRIOR IN TRAINING

Ao'nung has not passed the rites of passage for the Metkayina clan warrior class yet, so he does not wear the symbolic garment that the elder warriors and hunters of the clan do.

AO'NUNG'S BELT AND LOINCLOTH



Skimwing jawbone blade

Seagrass cording-wrapped handle

AO'NUNG'S KNIFE

Hardened reef-nut shell used as necklace clasp

FISHER

The primary Metkayina source of protein comes from fish living in the shallows. Ao'nung typically uses a spear to impale the fish and his knife to fillet it. As cultural rule demands, he only takes from the ocean what he needs for his family and clan and never lets anything go to waste.

Sea hemp weaving

WEAVING

When collecting material for weaving, Ao'nung strips the fiber from nearby plants and dries the strands in the sun to make thread. Any adornments or decorations are fashioned from shells, plants, stones, and other elements from the reef environment.

KNIFE SHEATH

Made from tanned surfstrider hide

Iridescent shell chips

ILU PONY TOOTH TRINKET

Reef bird talon wrapped in fish-scale leather

TALON NECKLACE

ARM BAND

FACT FILE

- > As part of his warrior training, Ao'nung will ride an ilu and work with it to drive away ocean predators that threaten the young of both their species.
- > Ao'nung enjoys bodysurfing and plunge-diving through the reef wall tunnels during changing tides.

SONG CORD

METKAYINA CANOES

THE METKAYINA DO NOT

use weapons. They are peaceful people who live in the mountains of the Pacific Northwest. They are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs.

DATA FILE

MANUFACTURER Metkayina family
MODEL Cedar-bark barkhouse canoe
APPLICATION Metkayina
LENGTH 28 ft (8.53 m)
MAX SPEED 12 knots (14 mph/22 kph)
CREW 2-4 adults
WEAPONS None

CLAN SKILLS

The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs.



Seagulls and other materials decorate bow.

Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs.

Decorative seagrass wrapping.

FAMILY VESSEL

Metkayina canoes come in a variety of sizes and styles. Each family has its own style, and one family was known for its canoes that would stand the rigors of open water. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs. The Metkayina people are known for their canoes, which are made of cedar and are decorated with intricate designs.



Cured klon skins provide water-repelling outer layer.

CANOE

Sharp bow slices through choppy waters.



COVE OF THE ANCESTORS

The Cove of the Ancestors is the sacred site of the Mekayina. It is one of several flux cove found on Pundua where there is an exceptionally strong magnetic field and strong concentration of unobtainium. The magnetic field is evidenced in the floating islands that are fluxpinned in space, above and below the water. These islands differ from the Hallowish Mountains in that they are smaller and more horizontal in nature due to the different geology found here in the distant atolls. In addition to the limestone and unobtainium, there is a strong sandstone component that causes specific erosion, creating elaborate sea caves and more horizontal islands. The flux con is most dramatically apparent in the spectacular arching structure that radiates in a torus shape.

THE SPIRIT TREE

THE OCEAN NA'VI

With the power of the Spirit Tree, the Na'vi can communicate with the forest. The Spirit Tree is a massive, ancient tree that has been growing for thousands of years. It is the heart of the forest, and the Na'vi believe it is the source of all life. The Spirit Tree is a massive, ancient tree that has been growing for thousands of years. It is the heart of the forest, and the Na'vi believe it is the source of all life. The Spirit Tree is a massive, ancient tree that has been growing for thousands of years. It is the heart of the forest, and the Na'vi believe it is the source of all life.

EYWA

The Eywa is a powerful, ancient spirit that has been growing for thousands of years. It is the heart of the forest, and the Na'vi believe it is the source of all life. The Eywa is a powerful, ancient spirit that has been growing for thousands of years. It is the heart of the forest, and the Na'vi believe it is the source of all life.

ZOOPLANKTON PHYLUM

The Zooplankton Phylum is a group of small, aquatic animals that live in the ocean. They are the smallest of the four phyla, but they are also the most diverse. The Zooplankton Phylum is a group of small, aquatic animals that live in the ocean. They are the smallest of the four phyla, but they are also the most diverse.

FROND

A single frond
divides into several
leaves for the
Na'vi to connect to.

FILTER

The Spirit Tree's filter
removes any harmful
substances from the water.

DATA FILE

NA'VI NAME: Rooting utulu

HUMAN NAME: Spirit Tree

LOCATION: Cove of the Ancestors

FACT FILE

> Situated at the center of the Cove of the Ancestors, the Spirit Tree is protected from heavy sea currents.

> The Spirit Tree rises and expands with high tides and lowers and compresses with low tides.



CHAPTER 7: THE OCEAN

Much like the Omatikaya rainforest, the oceans surrounding the Reel People's atolls are teeming with fascinating animals and plants of different types and sizes. The Metkayina rely upon the sea for every resource, and it is also home to their most sacred site under the sea, where they can connect with Eywa. Members of the clan ride and swim with the playful *ilu*, and some take part in open-sea hunts on the backs of sleek *skimwings*.

Fearsome *akula* are the apex predators of the food chain and represent a massive threat; the Metkayina can only hope to drive them away. Sentient whale-like creatures called *tulkun* also dwell in the sea and are deeply connected to the Metkayina, who see them as siblings and part of their clan. RDA scientists have just begun to study Pandora's sea life, but, unfortunately for the *tulkun* and reef Na'vi, human scientists have discovered an extremely valuable, harvestable material inside the *tulkun* brain.

ANEMONES AND CORAL

THE UNDERWATER REEF supports a symbiotic relationship among anemones, corals, flora, and algae. The mutual activities of the different species—oxygen exchange, photosynthesis, fertilization, and waste removal—enable the reef to thrive and grow. The branchwork of the coral structures is a visual metaphor for the interconnectivity between the reef species, and also resembles Eywa's organizing principle of a fractal network: a circulatory system that maintains balance and stability. The reef's health is exhibited by the variety of anemone and coral shapes, sizes, and colors, and by the abundant biodiversity, which scientists believe to be unparalleled in any known ecosystem in the universe.



All sea life on the reef co-evolved over hundreds of millions of years, making it one of the oldest and most successful habitats on Pandora.

ELEMENT OF SURPRISE

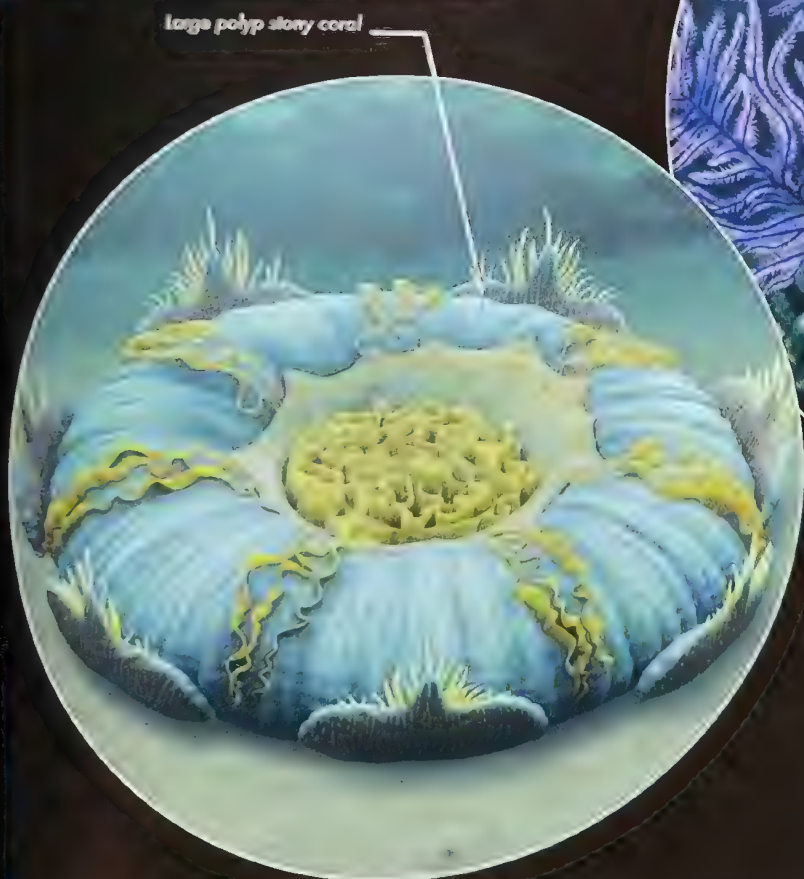
The daisy anemone is a fish-eating anemone that captures unsuspecting prey with its strong tentacles. It relies on electrolocation to sense the bioelectric fields discharged by certain types of large predator fish. The anemone can also lure prey by mimicking the signals that fish species use to attract a mate. Once the fish swims within reach, the daisy anemone quickly extends its column and wraps its tentacles around the prey, injecting paralyzing venom before moving it into its mouth and breaking down its body with digestive enzymes. While dangerous to large predator fish, smaller fish often find protection and safe haven alongside it.



Sunlight passes through the delicate structures of the giant mushroom coral and provides solar energy to the symbiotic algae within.



WOM'S DELIGHT CORAL



STARRY DOUGHNUT CORAL

PROTECTORS OF LIFE

The tropical seafloor is a habitat for soft and stony dendroid corals, fan corals, and brain corals that are designed to filter underwater. This helps keep the ocean clean and its gas concentration under control. The corals also grow into colonies large enough to buffer and slow down water currents, protecting islands and coast lines from powerful waves and sea-level rises. Without them, the reef would become uninhabitable for all life forms.



FACTOR CORAL

Base anchors to rock or hard substrate

ILU

ILU ARE SMART, PLAYFUL, and curious. They are the most intelligent of the Na'vi, capable of complex thought and emotion. They are also the most playful, often swimming and playing with their riders. They are also the most curious, often swimming and playing with their riders. They are also the most playful, often swimming and playing with their riders.



Ilus enjoy working collaboratively with their Na'vi riders to drive away predators that threaten the young of both species. It is a symbiotic cooperation that serves both Na'vi and ilu.

Na'vi can easily oxygenate a Na'vi diver, allowing much deeper submersals.

Kuru extend from rear of skull

Fin (one of six)

Special organs in head and neck generate high frequency sounds for echolocation and long-range underwater communication

Fins are highly sensitive, larger pair, one smaller pair

DATA FILE

NA'VI NAME Ilu

HUMAN NAME Jaraklong, "sneaks, Delphaster, neoformes, sereides, "manglewing, lescie-shaped"

SIZE 6.5–49 ft (2–15 m), average size 23 ft (7 m)

SPEED 32 knots (37 mph/60 kph)

LIFESPAN 55–60 years

TOP VIEW

Head can be raised out of water for spotting and for social behavior

SIDE VIEW

Long, muscular neck allows ilu to plunge into swarms of fish before prey feel the pressure wave of the main body

Sleek, streamlined body and camouflage markings

FACT FILE

DIET

Small fish and marine life, especially cephalopods found on the seabed

HABITAT

Plunges in the green waters of the Pandoran waterways

Rudder-like tail

DOMESTICATED ILU

Ilus are easily domesticated, and groups often come to live adjacent to Na'vi reef settlements or travel with ocean nomads. They adopt the territory of the Na'vi partners, and act as a warning system when large predators approach. During initial bonding, the Na'vi rider must force the creature to go slowly or they can be pulled off by water drag. If they succeed, riding the animal, the rider is with a harness so they can hold on better and to help carry weapons. Ilus do not develop individual imprinted bonds with riders, so any competent rider can mount any ilu that has been familiarized with the kuru bond.

[illegible]

CALLLED TSURAK BY the Na vi, skinwings are talon-tipped Pangaoran flying fish. The skinwing is a timid, shy creature that lives in the warm, shallow waters of the Pangaoran coast. It is a common sight in the mangroves. When a skinwing is frightened, it can fly out of the water, wing the water away, and glide through the air. It is a graceful and elegant creature, with a long, slender body and a large, flat, wing-like structure. It is a common sight in the mangroves, and it is a popular food source for the Na vi. The skinwing is a timid, shy creature that lives in the warm, shallow waters of the Pangaoran coast. It is a common sight in the mangroves. When a skinwing is frightened, it can fly out of the water, wing the water away, and glide through the air. It is a graceful and elegant creature, with a long, slender body and a large, flat, wing-like structure. It is a common sight in the mangroves, and it is a popular food source for the Na vi.



Gill slits behind the spiracle openings allow breathing underwater

Inside the body, *pulmobranchia* (lung-gills) can function as gills or lungs —

Small pectoral fins occasionally skim water surface, providing stabilization and balance while tsuruk is in ground-effect

Needlelike teeth and long snout
used to scoop fish out of the water
while moving at high speeds

It is a bold and powerful breed, with a reputation for a November 1st, winter solstice, ceremony, where it is believed that the sun is reborn. The ceremony is held in the village of Tsurak. Unless a bold and powerful breed, the Tsurak may not have been able to survive in the wild. It typically hunts in a large territory. Tsurak are high-maintenance mounts and require a lot of bond-time to remain loyal and return to the village. They are best suited to strong young riders who hunt big game or are on defensive patrol as outriders, defending the approach from numerous major petagic predators.

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REAR VIEW

Tsuru are amphibious — neither fish nor simply breath-hold divers. They can hold a lungful of air for high-energy movement, such as when diving. When the oxygen is depleted they can breathe the oxygen-rich seawater during prolonged waiting (ambush feeding)

Tsuru are amphibious — neither fish nor simply breath-hold divers. They can hold a lungful of air for high-energy movement, such as when diving. When the oxygen is depleted they can breathe the oxygen-rich seawater during prolonged waiting (ambush feeding)

NA'VI NAME: *Le'et*

HUMAN NAME: ALBERT J. ROSEN
DATE: 10-10-68

SIZE 43 1/2-44 1/2

MAX SPEED 22 knots, 152 mph, 79.13

LIFESPAN 70 yrs.

11. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$
 12. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

between strong, tensile 22° and 71.3° as

Fins tuck into sides when diving underwater
allowing skimming to form sleek torpedo shape



Atop a skimwing, Jake is ready to fight the RDA's forces. These flying fish are difficult to tame and ride, and are for strong and advanced riders only.

Smaller pelvic fins act like horizontal stabilizers on an airplane

FACT FILE

DIET

Mostly fish and small aerial creatures

HABITAT

Open oceans and lagoons of Pandora, but can be found close to the shore near the Metkizyma village

FACT FILE

➤ On the evolutionary scale, the skimwing is halfway between a fish and an *ikran* (mountain banshee). In fact, skimwing and *ikran* share a common ancestor.

> Unlike a dolphin or whale, skimwings cannot drown.

Large, powerful caudal fin provides thrust underwater and while gliding on the surface

REEF FISH

THE REEFS OF PANDORA are some of the most biodiverse regions on the moon, hosting a staggering variety of amazing sea life, including countless species of reef fish. With their brilliant colors, fantastic patterns, and strange shapes, these fish blend in with the vibrant coral reef. Fish are an important primary food source for the Metakayina, and fishing is an integral part of their culture. Fishers are highly respected, frequently being depicted in Metakayina artwork and regarded as heroes in their proverbs and stories.

FACT FILE

DIET

Glider fin feed mostly on microscopic plankton-like marine animals.

HABITAT

The fish is found in shallow waters along the coastlines of Pandora, occasionally venturing into the open ocean, and migrating between different regions in search of food.

Intricate patterns can be found on even the smallest of Pandoran fish.

Rectangular head extensions aid avoidance of larger predatory fish

HAMMERBROW FISH

The hammerbrow is a small, colorful fish that schools in small groups of up to a dozen. One of its distinct physical features is a pair of large, rectangular extensions at the top of its head. These are believed to help the fish detect subtle disturbances in the surrounding water, allowing it to evade would-be predators.

Several sets of valve-like pits enable filtration and extraction of oxygen from water

GLIDER FIN

A tiny shallow-water fish usually found in schools of several hundred, the glider fin is what is known as a forage fish—a common and numerous prey fish that supports much of the food chain above it. Many larger fish, Pandoran marine birds, *ilu*, and other ocean fauna rely heavily on the glider fin as a primary food source, making it a keystone species of the reef ecosystem. Its natural lifespan is about a year, although many are eaten as prey before completing their life cycle.

SURVIVAL TACTICS

Glider fish are commonly eaten before they are able to reproduce. To make up for this, those that do survive can lay as many as 200,000 eggs. This is an important way of replenishing the ecosystem's food supply.

Brightly colored stripes aid camouflage in colorful coral reef

Wide "monofin" flaps in a fluid wavelike motion propelling fish slowly through water

Single tail fin provides much of the thrust for swimming

PINCER FISH

The graceful pincer is a small, predatory fish that is harmless to Na'vi but can be quite dangerous to fish smaller than itself. It sports two large, bony tusks that are not only used to herd smaller prey toward its mouth, but are also perfect for jousting matches with other pinners to settle territorial disputes.

Large tusks used for catching prey and battling other pincer fish

Patterns on sides of fins are slightly iridescent

Tusks can dig through sand in search of crustaceans

FEATHERTAIL FISH

A fish that is more tail than body, the feathertail derives its name from the signature long, rounded tail fin. Like the glider fin, the feathertail is an important prey animal within the reef ecosystem, providing food for many other reef denizens. It is never eaten by the Metakayina; however, to them, its flesh tastes horribly bitter.

Long, powerful tail fin allows fish to "sprint" for short periods of time in order to avoid being eaten

Two sets of eyes for enhanced spectral range

Long, winglike fins produce birdlike flying motion underwater

Split tail fin propels fish in a kicking motion

Upper half of split tail fin is larger than lower half

FLAT SKATE FISH

The flat skate is a vibrantly colorful fish that is considered a delicacy by the Metakayina when cooked. It is a very fast swimmer, however, making it difficult to catch except by the most experienced fishers.

GILL MANTLE

THE GILL MANTLE is a graceful, diaphanous, semitransparent marine invertebrate found throughout Pandora's oceans. It is of particular value to the reef Na'vi, who use it to extend their time underwater. Once a Na'vi bonds with a gill mantle, the creature acts as a sort of external gill, feeding oxygen to the bonded Na'vi through their *kuru* connection. In fact, the Metkayina name *xampaysye* translates roughly to "sea breather" in English.

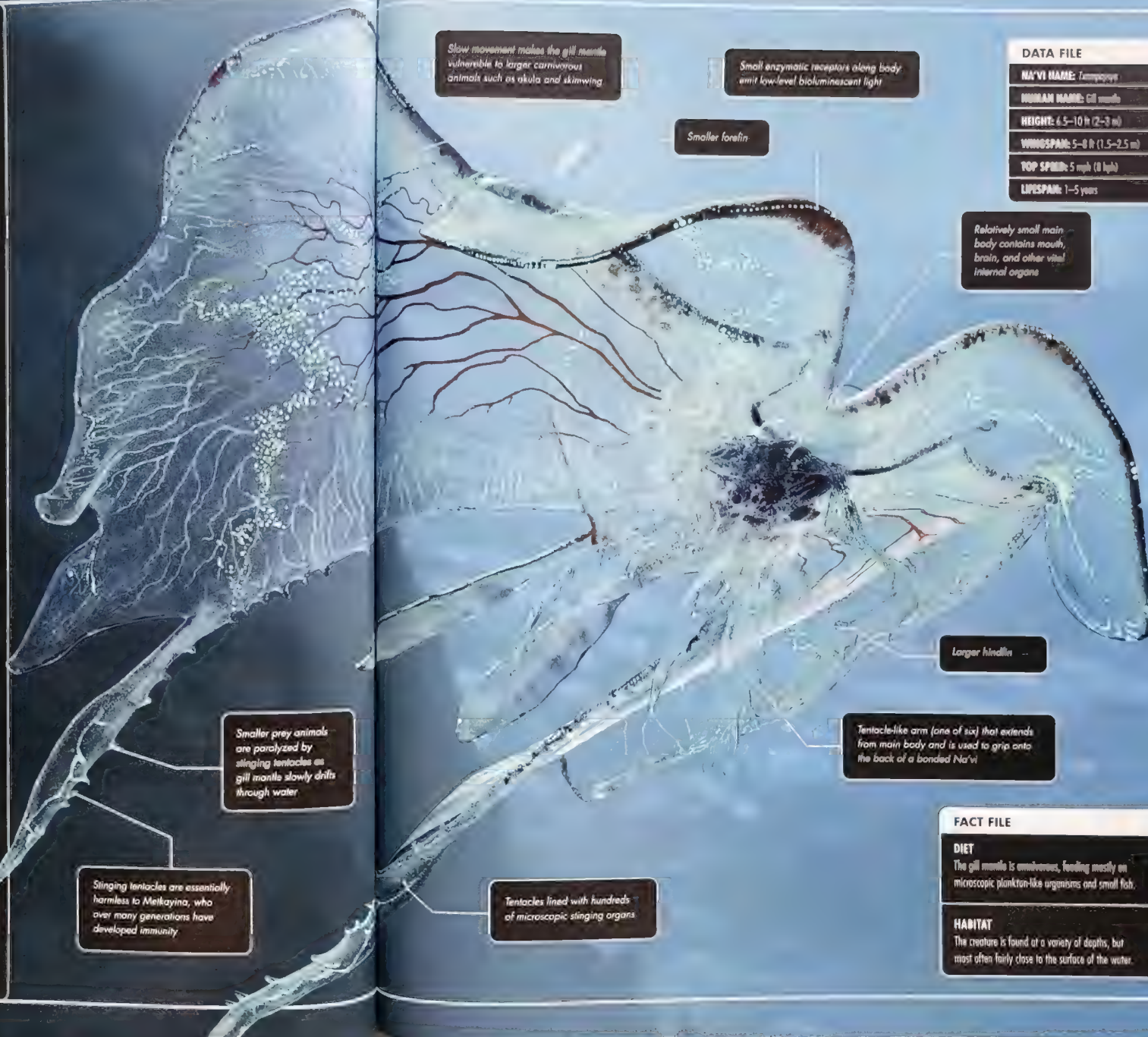
WING-LIKE FINS

A large proportion of the gill mantle's body is made up of several pairs of delicate, translucent fins. Human observers have sometimes compared the shape of these fins to butterfly wings or even artistic depictions of angel wings. The resemblance is especially noticeable when the creature has bonded with a Na'vi diver and is resting along its companion's back. The fins appear as if they are gracefully sprouting out of the back of the Na'vi and "flapping" in the currents of Pandora's oceans like wings.



UNUSUAL ANATOMY

The gill mantle has not evolved a traditional respiratory system. Instead, its entire body acts as a sort of underwater "lung," diffusing oxygen from the water around it through its epidermis. Scientists have hypothesized that the gill mantle co-evolved symbiotically with the ocean Na'vi, who protect them and transport them throughout the oceans—giving them a wide distribution and access to the best grazing sites.



Slow movement makes the gill mantle vulnerable to larger carnivorous animals such as skula and skimming.

Small enzymatic receptors along body emit low-level bioluminescent light.

Smaller forefin

Relatively small main body contains mouth, brain, and other vital internal organs.

Larger hindfin

Tentacle-like arm (one of six) that extends from main body and is used to grip onto the back of a bonded Na'vi.

Smaller prey animals are paralyzed by stinging tentacles as gill mantle slowly drifts through water.

Stinging tentacles are essentially harmless to Metkayina, who over many generations have developed immunity.

Tentacles lined with hundreds of microscopic stinging organs.

DATA FILE

NA'VI NAME: *Xampaysye*

HUMAN NAME: Gill mantle

HEIGHT: 4.5–10 ft (2–3 m)

WINGSPAN: 5–8 ft (1.5–2.5 m)

TOP SPEED: 5 mph (8 kph)

LIFESPAN: 1–5 years

FACT FILE

DIET

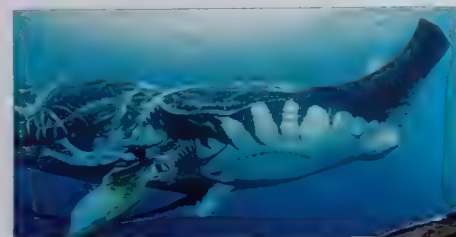
The gill mantle is omnivorous, feeding mostly on microscopic plankton-like organisms and small fish.

HABITAT

The creature is found at a variety of depths, but most often fairly close to the surface of the water.

TULKUN

TULKUN ARE A RACE OF enormous, highly intelligent sea-dwelling creatures. With intellect and cultural development equal to the Na'vi, *tulkun* possess not only names and rich family histories, but also sophisticated music and poetry. After eons of bloody warfare among their social groups, *tulkun* turned away from violence and are collectively sworn to a life of absolute pacifism. Their moral principles are aided by their physical structure: their thick armor plating shields them from natural aggressors without the need for retaliation. Metkayina and *tulkun* share a unique and powerful interspecies kinship, with each Na'vi paired for life with a brother or sister *tulkun*. In this and many other ways the *tulkun* are sacred and ancient partners to the Metkayina sharing rituals and living together in harmony.



Like the whales of Earth (now sadly all extinct), the *tulkun* are warm-blooded air breathers. They inhale and exhale through a row of nostrils at the back or top of their head (rostrum). Sometimes as they surface, their powerful exhale blasts water high into the air, creating their signature "blow," or plume.

FACT FILE

DIET

Tulkun feed on thousands of tiny shrimplike creatures and a variety of small schooling fish.

HABITAT

Tulkun mainly inhabit the open seas and oceans, but they sometimes enter the Metkayina lagoon through the underwater tunnels in its reef.

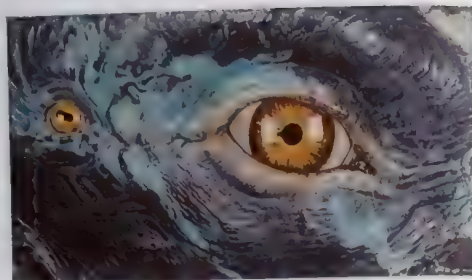
DATA FILE

NA'VI NAME *Tulkun*

SIZE Males: 93–263 ft (28–80 m)
Females: 65.5–230 ft (20–70 m)
(Size varies greatly depending on age/maturity)

SPEED 22 knots (25 mph/40 kph)

LIFESPAN 150–250 years



Colorful eye patterns are unique to each individual, and are often used by marine scientists to tell different *tulkun* apart.

Thick, turtle-shell-like plating on back is both flexible and incredibly tough —

Two pairs of flukes can be folded into a variety of different configurations, making *tulkun* quite nimble considering their size

Flukes occasionally used to slam against predators as form of defense

Large, powerful pectoral fins help *tulkun* roll and twist underwater

Sensor crests are larger in males, and are believed to be used in courtship displays

Powerful flukes provide thrust

ADULT TULKUN BULL

Trifurcated jaw hinges in three parts to allow ingestion of massive schools of tiny creatures

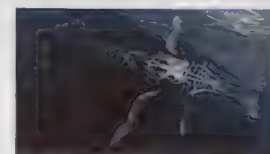
TULKUN TOTEMS

Tulkun have become the totem animal for the Metkayina. Their forms are mimicked in ornamentation throughout Metkayina culture. Large woven wall panels depicting the *tulkun* are built into Metkayina *maru* (homes) to honor their bond. While many parts of their dwelling structures may be damaged and repaired, the Metkayina never replace these panels highly, preserving and cherishing them above all else.

Smaller cephalic fins help act as canards for subtle aquatic maneuvers

TULKUN DISPLAY

When the *tulkun* pod returns to its reef home, the creatures partake in the return ceremony. As part of this ceremony, the calves are recognized as adults and the Metkayina give them ceremonial tattoos.



Echolocation sensor crests are variously colored and patterned, and grow in size with age

Vertical striping pattern varies among individual *tulkun*

Sensor whips pick up subtle water currents and temperature gradients

Oil-filled sonar organ in lower jaw

SOUGHT-AFTER SUBSTANCE

While dissecting a *tulkun* study subject, RDA marine biologist Ian Garvin made a momentous discovery. He found a naturally occurring substance in the *tulkun*'s brain that has the medical power to stop human aging. The substance, known as *amrita*, can be extracted from dead *tulkun* using a specialized drill deployed from the SeaDragon ship, which now hunts the large marine animals in Pandora's oceans.

Amrita stored within RDA containment vial



UNDERSEA MEGAFaUNA

Of the marine megafauna (large sea animals) encountered near the Metkayina reef, only the *tulkun* are intelligent and sentient. The Metkayina can communicate with them using three-fingered sign language. Other large species include the *nalutsa* and the *akula*, two giant, sharklike creatures.

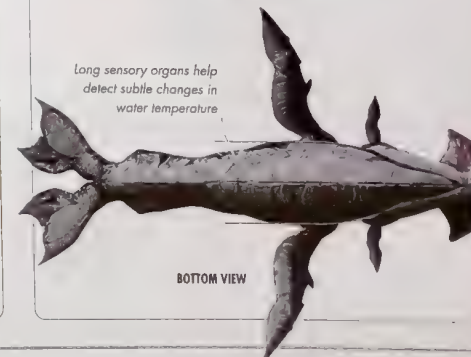
Two sets of fins, one larger and one smaller, allow precision while swimming

Crests sometimes used in territorial displays between males



FRONT VIEW

Long sensory organs help detect subtle changes in water temperature



BOTTOM VIEW

TULKUN CALVES

EACH YEAR, ON A CERTAIN DATE, hundreds of *tulkun* and their calves congregate near the Melkayina village at the hallowed Cove of the Ancestors. Here, all the new calves born within the last year are brought to the Spirit Tree for their first connection to Eywa. This Calf Communion ceremony is attended by the *tulkun* pod's Melkayina "brothers and sisters," who also bring their own young to bond with the global neural network. The event is sacred to both *tulkun* and Melkayina and is a deep part of their shared culture. The spectacle of innumerable *tulkun* and Na'vi babies arrayed around the sacred underwater tree is surely one of Pandora's true wonders.

DATA FILE

SPECIES	<i>Tulkun calf</i>
LENGTH (average)	34.5 ft (10.5 m)
SPEED	22 knots (25 mph/40 kph)
CALFHOOD	10 years

TULKUN KURU

Newborn *tulkun* calves receive oxygen and nutrients through the mother's *kuru*. The *kuru* is a highly important organ to all higher Pandoran animals: it not only carries "data" in the form of neural signals, but also can enlarge to carry oxygen and nutrients through its veins and arteries. Triggered by hormones, a female Na'vi or *tulkun*'s *kuru* will enlarge to sustain the life of a newborn. The tendrils at the end of a *kuru* thus create an interface that is part USB-port, part placenta.

AGILE SWIMMERS
Tulkun calves are amazing swimmers, and just as nimble underwater as their parents.

BIRTH TO MATURITY

Tulkun reproduce approximately every two to three years. Gestation is about 18 months, and the *tulkun* always give birth to a single calf at a time. Calves stick close to their mothers for the first few years of their lives, a crucial time in their development for social bonding. After these early years calves become more independent, although full physical maturity is not reached until around 10 years of age.

Sensor crests are barely visible during infancy and begin to mature during adolescence



FRONT VIEW

Kuru connection to the spirit tree begins within first year of life

Calves have a higher percentage of body fat than their leaner adult parents

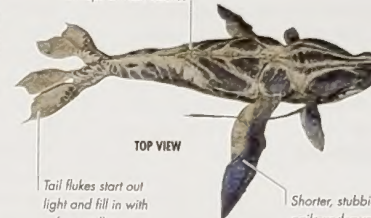


SIDE VIEW

PATTERNS FOR CAMOUFLAGE

The markings on *tulkun* adults are relatively drab, but calves have colorful patterns, usually in a range of rich blues, purples, and cyans. Light-colored patches help to give the effect of dappled light against the ocean floor, allowing the calves to blend in with their environment. Calves are relatively small when they are first born, so they remain vulnerable to large predators for many years.

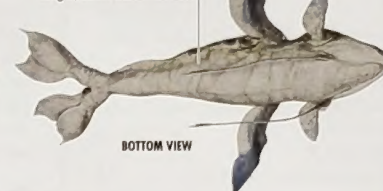
Unlike adults, calves have many light-colored patches on tops of their bodies



TOP VIEW

Tail flukes start out light and fill in with color as *tulkun* age

Relatively light underside helps calves disappear against the bright, sunlit ocean surface



BOTTOM VIEW

Shorter, stubbier fins are just as agile underwater as adult fins

LISTENING DEVICES

An array of sensitive sensor pits on the underside of the *tulkun*'s crest gives the creatures their acute sense of hearing.

NEURAL WHIPS

In the *tulkun*, *kuru* are located inside the mouth because newborn calves are sheltered from predators inside their mother's mouth for the first few months of life.

NATURALLY PLAYFUL

Calves are playful and gregarious by nature, and can often be seen exuberantly frolicking around their mothers.

FACT FILE

- > Calves grow rapidly within the first 10 years of their lifespans. *Tulkun* continue to grow more slowly throughout the rest of their lives, so elder *tulkun* are larger than young adults.
- > *Tulkun* calves are physically much smaller than adults, but, within the first few months of their lives, can swim almost as fast as mature *tulkun*.

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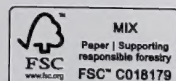
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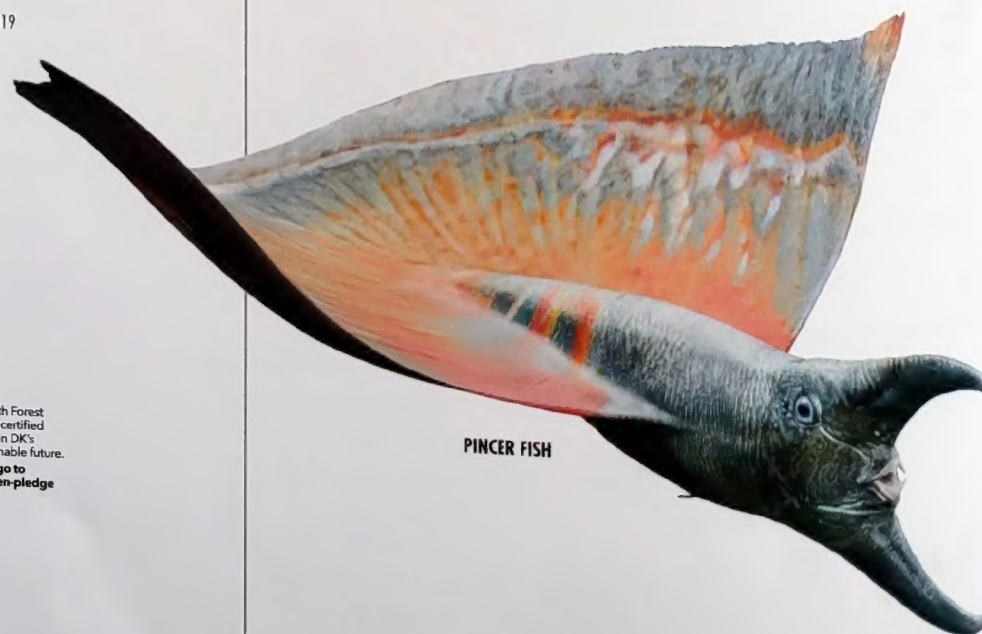
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PINCER FISH



SEAWASP

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Foreword by Sigourney Weaver



HEXAPEDE TOY



ARMBAND



TRANQ DARTS



RUGGED FIELD PAD



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